Gleanings in Bee Culture

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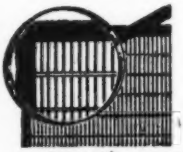

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AMERICAN BEE JOURNAL
Hamilton, Illinois

Monthly HONEY Report

WALTER BARTH, Field Editor

IN MANY parts of the country the future of the honey crop hinges on moisture conditions. Generally much more rain is needed. This is particularly true in New England, and continues south into Virginia. The southern Gulf states have sufficient moisture for a crop, except, of course, Texas. The Lone Star state needs several years of good rains to get back into average production.

The outlook in the East is favorable for there the clovers are starting to yield after a fairly good spring flow from fruit bloom and dandelion. Higher costs of jars and rising freight costs are expected to raise honey prices here. In parts of New York state a cool spring has kept bees back about three weeks.

Sourwood is starting to bloom in the South. Along the east coast of North Carolina the gums and gallberry are the best in years. In Florida, where the flow is about over, the gallberry flow was light but the honey was of good quality. The drought has at last been broken in that state. The clover flow is over in Mississippi and the cotton flow will soon start.

Going north into the Great Lakes region, moisture conditions are good. Colonies are generally strong with little tendency for swarming. Honey plants are in excellent shape. White dutch clover, generally a good yielder, is very abundant. Hopes are high for a crop but the flow has been very light to date.

In Kansas and Iowa honey crop conditions have improved a lot during the last three weeks. It has generally been dry in Iowa until late June when general rains of nearly two inches brought relief. This rain is reported to be the best received by Iowa since September, 1955. The improved crop prospects have already brought reports of flows from alfalfa and basswood.

Montana beekeepers are expecting only about 75 per cent of a normal crop although their bees are in good shape. Again dry weather is the culprit. While it has also been dry in the southwest, beekeepers are hopeful there for a crop from cotton. The spraying of insecticides has taken a large toll of bees here and in Wyoming. This may reduce chances to gather a crop in some areas.

Summary

Late reports from beekeepers indicate wider variations in conditions of bees and honey plants than usual in different areas. However, conditions will have to improve if the 1956 crop is to equal last year's harvest. It is interesting to note that the U. S. Department of Agriculture, for the third straight year, hasn't taken over any honey that was on loan or purchase agreement.

Honey prices are below those of last January but the market is strengthening. An appreciable amount of the old crop remains from last year.

White honey is generally bringing 13 to 14 cents with higher prices in isolated areas. Amber honey remains strong at 12 to 13 cents per pound provided it doesn't have a strong flavor. Comb honey is getting from $8.00 to $9.00 per case with an average of $8.40. There isn't much comb honey around so that some demand has already built up.

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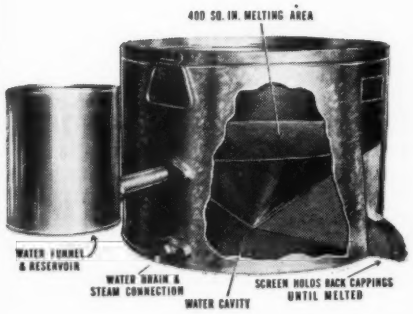
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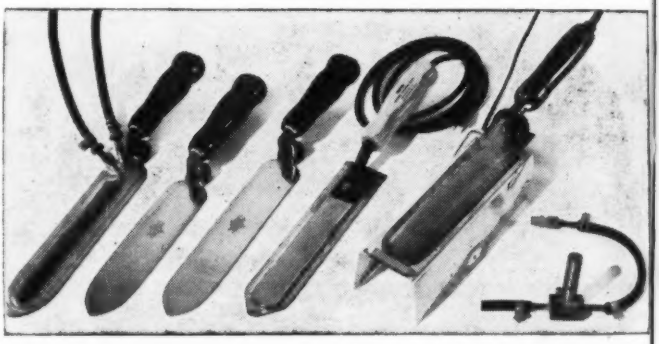

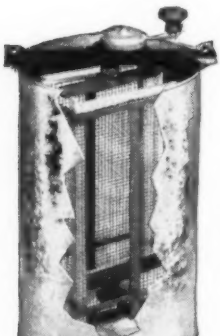

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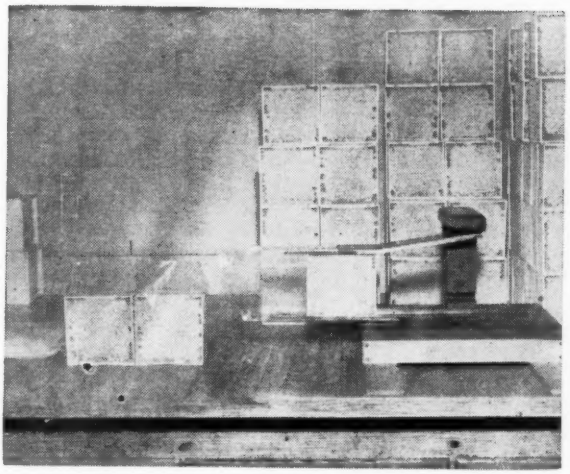


Machine originally used for cellophane bag wrappers was found ideal for poly-bags.

ONE WOULD think preparing comb honey for market begins after the honey is produced and taken from the hives. Actually, we begin our preparation for market before the honey is even in the sections. There are a great many jobs we do that are very important and which make our work easier when marketing time comes around.

Our 3,000 supers get a complete over-hauling both inside and out every year. Propolis is scraped from supers, separators and small sticks. T-tins and springs are boiled sparkling clean in lye water. All this work is done so that when we fold those beautiful, new, white basswood sections we know that they will not be stained or scarred and mar the beauty of the white, soft, natural wood.

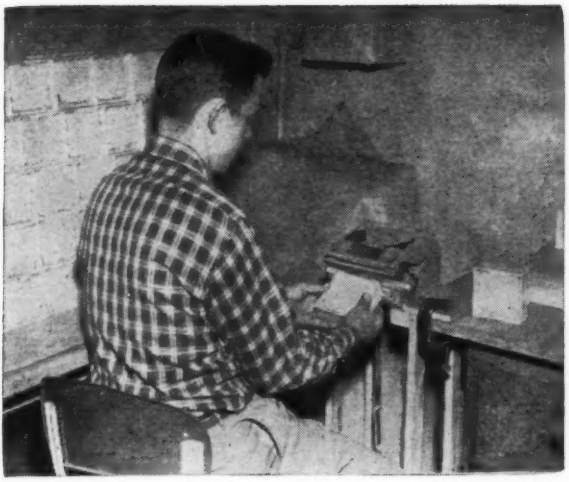
While folding the sections, all dove-tails are turned inward toward the center of the super. Then, while scraping the bottom of the sections in the fall, there will be no dove-tails on the outer edge to catch the razor blade on and endanger damaging the honey.

After folding the sections, the foundation is fastened; separators, sticks, and springs are put in place and we are ready for our final touch. Tops and bottoms of all sections are given a coat of paraffin, so that cleaning will be much easier and this will also protect the exposed part of the sections while on the hives.

All this work done during the cold winter months, when the mercury is pushing deep down into the bulb is actually the first steps in preparing our product for market.

Careful Handling Necessary

Comb honey is a food product that requires very careful handling from the time it leaves the hive until it reaches



Sealing the bag with the poly-jaw.

the consumer. We use extreme care in handling the supers during the honey flow. While working in the brood chambers, supers are placed on end to prevent the hot sun from damaging the delicate comb. While hauling the supers in from the bee yards, we place each stack upon an escape board so that the sections in the bottom super are not against the truck bed. This prevents possible bruising or crushing. Another board is placed on top of each stack before the canvas is spread over and roped down so that there will be no possible damage from rain or the filtering in of dust from the country roads.

Supers brought in from the yards are stacked in an extra building and fumigated with carbon disulfide before they are moved into the shop. Carbon disulfide is highly infammable and must be used with extreme care. Supers are placed in stacks of 15 and from three to four stacks are gassed at a time. This is usually done in the evening. By morning, the gas has had time to evaporate and we can carry the supers into the curing room.

Constant check is made on the moisture content of the honey. If the moisture is a little too high, the humidry is turned on and a large pedestal fan is used to circulate warm dry air through the criss-crossed stacks of supers. This brings the moisture content down to the certain per cent we want it. If the supers are left in the curing room over eight days, they are fumigated again the day before the sections are scraped.

Scraping is the "big job" in getting our product ready for market. It is very tedious work and many long hours are spent at the work table. Years before, my mother scraped all of the honey crop until I was old enough to help. My wife, Kathleen, helps now, so this gives me more time in the bee yards with Dad. At the end of the day, there are usually 50 to 60 cases of honey stacked in neat rows upon the table for me to grade when I get home.

The tops and bottoms of sections are scraped with new single-edge razor blades. Then the edges are scraped. The knife we use for scraping the edges is hand-made and honed razor sharp. In the scraping room, we installed a ¾-ton air conditioner, since the last three years have been very hot and humid during the scraping period. The propolis becomes more brittle and does not stick or gum upon the scraping knives. This also is a help to us when fastening foundation in the sections during hot weather.

Grading Rules

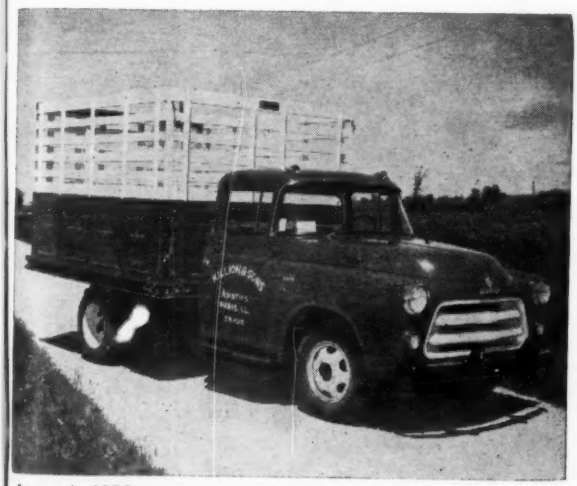
We have made our own rules in grading honey. These rules have been slightly higher than the present Federal Standards. I refer to the Federal grades that have been in effect since August

1933. A committee is now working on a proposed revision of United States Standards for grades of comb honey. Since so few beekeepers are producing comb honey, now is a good time to revise the standards. Personally I wish each grade would be raised one ounce. This would keep a lot of cull comb honey off the shelves which is now stamped with a Federal grade, and beekeepers would strive to produce a better product for the market. A few want the minimum net weight of Standard Section Comb Honey lowered one ounce stating that weights in section comb honey is immaterial as long as the honey is either Fancy, No. 1, or No. 2. If this was decided upon, this would make the minimum U. S. Fancy comb honey 11 ounce, U. S. No. 1, 10 ounce, and U. S. No. 2, 9 ounce. We can produce all the 11 ounce honey we want too but what is the poor housewife getting for her money? It seems a shame to lower the net weights just so a few can market their 11 ounce comb honey, for example, under a U. S. Fancy grade stamp. If they cannot produce a heavier section to reach the Fancy grade, then it doesn't seem quite fair to lower it and let them in. After all, don't all beekeepers always try to produce a better quality honey each year for their customers, and lowering the standards doesn't seem to be the right answer.

Have you ever started to pick up a section of comb honey from the grocer's shelf and found it stuck tight? Or, have you seen three or four perfect looking thumb prints on the surface of a beautiful section of honey? Of course you have, and this has been our one great problem in marketing. At first, we placed the guilty finger on little Davy Crocketts and we moved the honey higher upon the grocer shelves. Still there were more thumb prints showing upon the honey than they had on file down at the local police station.

First, we used the cellophane wrappers, then changed to the comb honey carton for the past few years, still we had damage and leakage on the shelves. Our buyers began complaining and we didn't blame them. Certainly, with all the present day modern packaging methods we could surely find something that would answer our problem. We started to checking plastic boxes, polythene, pliofilm, vinyls, polyethylene and other plastic bag materials.

I believe we have found the closest answer so far. At least it has stopped the complaints and stopped the leakage on the shelves and is also a package that merits the quality of the product. This past season we marketed all our comb honey in polyethylene bags. The honey was placed in a gusseted polyethylene bag, heat sealed, and then put



One of our trucks. The top racks are removed when delivering the honey to market.

into a comb carton. This has given us more work, increased packaging cost, but we raised our prices and had a package that has given us a little more peace of mind.

The gusseted bags are .002 thickness polyethylene and stands up very well under rough handling.

It also gives the capping a whiter appearance. We tried to use a thinner tubing which was .0015 thickness, but the corners of the sections punctured it more easily.

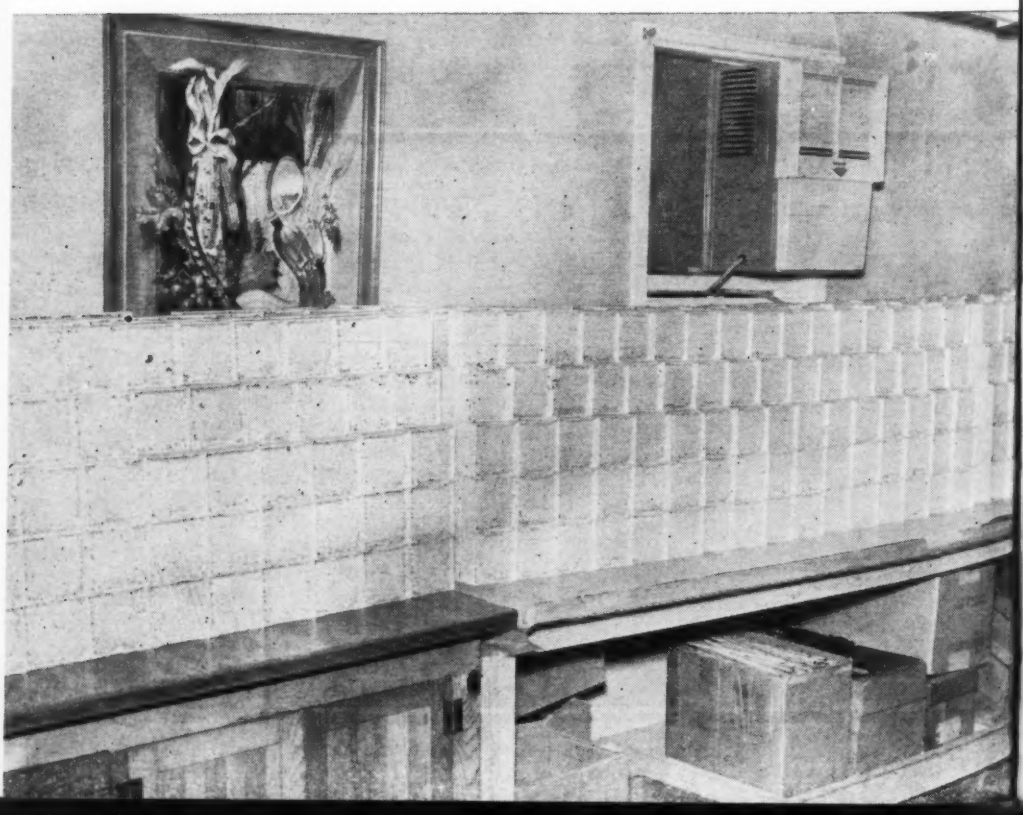
The machine we use for sealing the bags is called the "Poly-jaw". It heat seals one bag at a time and is foot pedal operated. For adjusting the sealer to varying table heights, a turn-buckle was placed in the rod connecting the foot pedal with the sealer. It has an adjustable heat control, which controls heat continuously and accurately over a range up to 550 degrees. The faster the bags can be sealed the higher the thermostat is set. Only the upper bar is heated. To prevent the seal from sticking to the heated upper bar a teflon impregnated cover is placed over the bars and between which the seal is made. After a time you may have to replace the inexpensive teflon cover.

We try to deliver our honey to market during warm weather. In cooler weather the comb becomes very brittle and shatters very easily in hauling. If we do haul comb honey in cold weather, it is left in a well heated room until the last minute before loading. All deliveries are made in our own trucks. When we leave the honey at the stores or warehouses, we know that it has been delivered in perfect condition.

I have touched lightly on the different steps in getting comb honey ready for market. For more complete detailed information, I suggest a copy of my father's book, "Honey in the Comb".

Paris, Ill.

At the end of the day, there is usually 50 to 60 cases of honey stacked in neat rows upon the table to grade when I get home. (Note. Temporary table in use and air-conditioned.)



Nectar Production by white clover

by E. OERTEL,
Entomology Research Branch, Agr. Res. Serv., U.S.D.A.[1]

WHITE CLOVER (**Trifolium repens** L.) is widely distributed over the United States and a major honey plant in some states. It is the most important honey plant in the river-bottom areas of Louisiana. Tests were made from 1952 to 1955 to determine how much nectar was produced by white clover blossoms.

Method

The blossoms were taken from plants growing in the greenhouse or outdoors. Outdoor plants were covered by 8-mesh hardware cloth to prevent honeybees from working the blossoms.

Mature or nearly mature blossoms were used.[2] Four selected clones were used in 1954, but only two in 1955. Blossoms from the greenhouse were taken at about 9 a.m.; those from outdoors in the forenoon and afternoon. The pasture plants were our common Louisiana white clover. Ladino white clover blossoms were available only in the greenhouse. Blossoms were taken over a period of several weeks.

The nectar was extracted by centrifuging the blossoms in Bauer and Schenck calibrated capillary tubes at 1500 r.p.m. for five minutes. The outer portion of the florets was removed so that the heads could be placed in the tubes. The method has been described by Swanson and Shuel,[3] who used it in a study of red clover, and by Bailey et all,[4] for white clover.

[1] In cooperation with Louisiana State University.

[2] These clones were made available through the courtesy of C. R. Owen, Crops and Soils, Louisiana State University. Clones are plants derived from a single plant, as by cuttings or runners.

[3] Swanson, C. A., and R. W. Shuel. 1950. The centrifuge method for measuring nectar yield. Plant Physiology 25:513-520.

[4] Bailey, M. C., E. A. Fieger, and E. Oertel. 1954. Paper chromatographic analyses of some southern nectars. Gleanings in Bee Culture 82: (7, 8): 401-403, 472-474.

Table 1. — Nectar Yields from white clover at Baton Rouge, La., 1952-55.

Year	Location	Kind of clover	No. of heads
1952	Pasture	La. common	305
1953	Outdoor plots	La. S1 strain	260
1954	Green-house	Clone 76	20
		711	28
		715	28
		721	22
	Outdoor plots	76	26
		711	13
		715	23
		721	25
1955	Green-house	76	75
		711	96
	Outdoor plots	76	57
		711	55
	Green-house	Ladino	62
	Pasture	La. common	80

Results

The results of these tests are given in Table 1. There was considerable variation in yields between greenhouse and outdoor samples and among samples taken on one day. For example, clone 711 (outdoor plots) yielded from 2 to 27 microliters[5] per head on March 11, 1955, and from 0 to 6 microliters on May 6. The yield per head of Louisiana common in a pasture ranged from 1 to 12 microliters on May 24, 1955. Other workers have also found wide variations in yield. Ewert[6] reported that in Germany the average nectar yield per 1000 blossoms of a plant species might be 8 or 9 times greater one year than another.

The average nectar production of the four clones used in the greenhouse in 1954 varied considerably. Clone 711 yielded significantly more nectar than the others, and clones 76 and 715 did not differ significantly from each other, but did yield significantly more nectar than clone 721. These results show that high nectar-yielding strains of white clover can be selected. Shuel[7] has suggested that red clover plants can be selected on the basis of high nectar yield.

Since each white clover floret probably has a nectar-secreting gland, the yield of nectar, all other factors being equal, depends upon the number of open florets. There was a highly significant correlation between the number of florets and the nectar production per head. The clones in the greenhouse had more florets per head than those grown in the field.

In the latitude of Baton Rouge (30°31′ North) Ladino clover produces only a few blossoms, but maintains vegetative growth in June and July. On the other hand, Louisiana common white clover blossoms profusely in March, April, and May, but dies out vegetatively early in June, according to Owen.[8]

Clones 76 and 711 and Ladino clover were grown in the greenhouse under 16 hours of fluorescent light per day from November 25, 1954, to March 11, 1955, then for the duration of the test the lights were used 14 hours per day. At the same time clones from the same plants were grown in the greenhouse under natural daylight. The time between sunrise and sunset at Baton Rouge is 11 hours 25 minutes on November 25, 10 hours 10 minutes on December 25, 12 hours 12 minutes on March 25, and 14 hours 7 minutes on June 25. Other conditions in the greenhouse are believed to have been the same for all the lots of clover plants.

The clover under artificial light began to blossom on February 2. Ladino continued to bloom until April 22 and produced an average of 6.11 microliters per head (see Table 1). Clones 76 and 711 bloomed only until February 25. The number of blossoms produced by these clones was so small that the nectar yields are not given in the table. Under daylight conditions clones 76 and 711 bloomed from February 22 to May 19, but the Ladino plants did not produce a single blossom.

Discussion

Nectar yields reported here probably more nearly represent total production per head than daily production. Clover blossoms in the field may be visited a number of times during the day by insects seeking nectar. Removal of the nectar may stimulate additional secretion by the florets. Pollination is prevented when wire cages are used to keep insects from the blossoms, and so nectar may accumulate in the florets for several days. When white clover florets are pollinated, they reflex within a few hours, soon turn brown, and nectar production ceases. The wire cages may have affected nectar production in some way, but no data on this point have been obtained.

Apparently 14 to 16 hours of light per day is favorable for the development of Ladino clover blossoms, but excessive for some selected clones of Louisiana common white clover. Ladino clover probably would be unsatisfactory for nectar production in areas where spring and summer day lengths are relatively short.

The potential nectar production of an acre of white clover can be calculated from the following information. Counts show that in Louisiana fields

[5] A microliter is 1 millionth of a liter. A liter is approximately 1 quart.

[6] Ewert, R. 1939. Der Blutennektar. Leipzig. Bienen Ztg. 54 (6): 173-176. [Translated by H. A. Kuyper. Original not seen.]

[7] Shuel, R. W. 1952. Some factors affecting nectar secretion in red clover. Plant Physiology 27: 95-110.

[8] Owen, C. R. 1953. Louisiana S 1 clover. La. Agr. Exp. Sta. Bul. 479, 15 pp.

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there may be from 200 to 900 white clover blossoms per square yard during the season (March, April, May), which is equivalent to about 968,000 to 4,356,000 blossoms per acre. A nectar production of 8 microliters per blossom, as for Louisiana S 1 in 1953, means a potential production of about 7.7 to 35 quarts per acre. At 3 microliters per blossom, as for Louisiana common in 1955, the potential production would be about 3 to 13 quarts per acre.

The average sugar concentration of outdoor nectar samples ranged from 42 per cent in 1952 to 55 per cent in 1955. The samples taken in the afternoon generally were more concentrated than those taken in the forenoon.

It is difficult to understand how blossoms growing on the same plant (sometimes only a few inches apart) of the same age, with approximately the same number of florets, and under the same conditions could show the variations indicated in Table 1. No known variations of centrifuging technique were introduced. Evidently much more work will be necessary before we know the factors that affect nectar production per blossom.

Summary

The amount of nectar produced by various strains of white clover was determined in experiments at Baton Rouge, La., from 1952 to 1955. Plants growing in a greenhouse, in experimental plots and in pastures were used.

The average nectar production per blossom was as follows: Louisiana common 4.8 to 3.2; Louisiana common selected clones 12.9 to 4.6 in a greenhouse and 9.9 to 4.2 in experimental plots, and Ladino 6.1 microliters. Potential nectar production per acre of Louisiana white clover pasture, based on average yield per head, ranged from 3 to 35 quarts. Ladino clover is not a satisfactory nectar producer in the latitude of Baton Rouge.

The amount of nectar produced by a head of white clover depends upon the number of open florets and also the hours of daylight per day.

EARLY BIRD BEEKEEPER — Prof. J. R. Hepler makes late spring check of his honey-making friends in hive still covered for the winter. Unseasonable weather kept bees inside but breathing through entrance brought them swarming out. The Granite State gardener and beeman is retiring from teaching and extension duties at the University of Hampshire after 39 years. Dr. William Lee will replace Prof. Hepler. — Photo courtesy Extension Service, University of New Hampshire, Durham, N. H.

XUM

Fall Apiary Management

as practiced by MILTON STRICKER, Annandale, N. J.

"AUGUST 1st is the beekeepers' New Year."

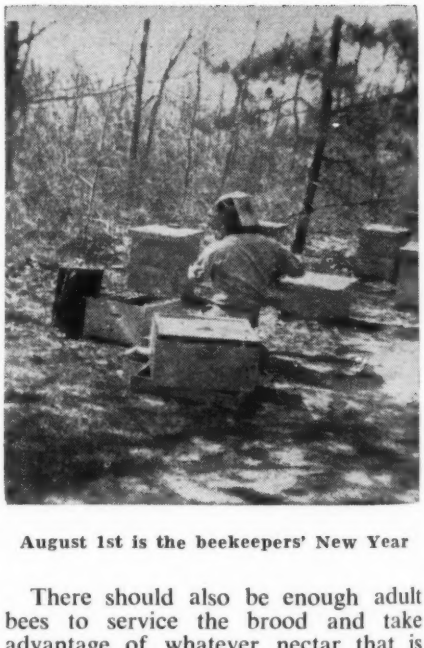
Like a good many statements made by the famous bee men of years gone by, it can't be improved upon. During that first week of August, you can easily judge your colony's chances of wintering and, of course, upon your wintering and the condition of these wintered colonies in the spring, so lies your chances of getting that next year's honey crop that usually seems so much larger in expectation than in reality.

A thorough examination of your colonies at this time can bring expectation closer to reality if you find a young queen of excellent stock, an ample supply of young bees, the equivalent of five standard frames of brood (in all stages) an abundant supply of pollen and at least fifteen pounds of surplus honey.

The crux of the matter lies with the queen.

If she is young and of the very best strain you can find for your area, you have the situation practically under control, because an efficient young queen will practically insure the other essentials for successful colony wintering and that is what fall management is directed toward.

When checking your colonies the first of August, if the queen is laying a solid pattern of eggs, and if you are reasonably sure she is young enough to continue her good work, examine the brood. There should be the equivalent of five standard frames filled with brood in all stages. This will insure an abundant cluster of young bees to harvest the fall flow.



August 1st is the beekeepers' New Year

There should also be enough adult bees to service the brood and take advantage of whatever nectar that is available, establishing a proper colony balance or morale for the critical period to come.

There should be at least fifteen pounds of surplus honey to tide the colony over any bad weather that may curtail nectar gathering.

There should be abundant reserve pollen for brood rearing and though this is often neglected, it is important.

Now, if your inspection shows that your queen is deficient, it is an easy matter to buy another and a new and vigorous queen if installed during the

Loading excess honey to take to a yard that needs it.

Is there some reserve pollen?

first week of August, will take care of the brood pattern and the supply of an ample cluster for the fall nectar gathering.

If the colony is very weak, frames of brood from a populous disease free colony may be added to the weaker.

If some reserve honey is not in evidence in the colony, a feeder can of sugar syrup should be added.

Ample Pollen Essential

As for pollen, of course pollen supplement can be added, but a gentleman in our area has solved this problem of August pollen by having a small section of his outyard plowed up and planted with field corn. He says the expense is small and it has caused his colonies to go into winter with a pollen reserve, something that he never had before. Although the August pollen problem is not usual, it can sometimes cause trouble.

Now with all these items checked, your colony is ready to gather the fall nectar and if the flow is good, the work is all done except a check for amount of stores about October 1st, when the colonies should have sixty pounds of well-ripened honey and an ample pollen supply.

If these are present, your select queen is still in evidence, the colony still appears populous, you have only to add a mouse guard, and an auxiliary flight hole in the upper portion of the hive. Even if this is not used as a flight entrance, it will be useful to expell excess moisture in the coming winter. Moisture has caused more colony casualties in this State than cold ever did.

If you are so unlucky as to have a failure on the expected fall honey flow, it would be well to begin early in September to feed a thick sugar syrup. This is a tedious messy job at best, but there is no alternative, unless you have unextracted honey in other yards that you can give to these. If this procedure is followed, the honey should be given to the colony early enough to allow the bees to utilize enough of it for late fall brood rearing, that all important "lay" that insures the required cluster of young bees for winter.

There are a few areas in New Jersey where the summer flow is so excellent, that beekeepers move into the area ignoring the fact that the fall flow is nil. They have their choice of leaving enough of the summer honey for winter bee feed, or moving to an area where there is a chance of enough honey for wintering purposes.

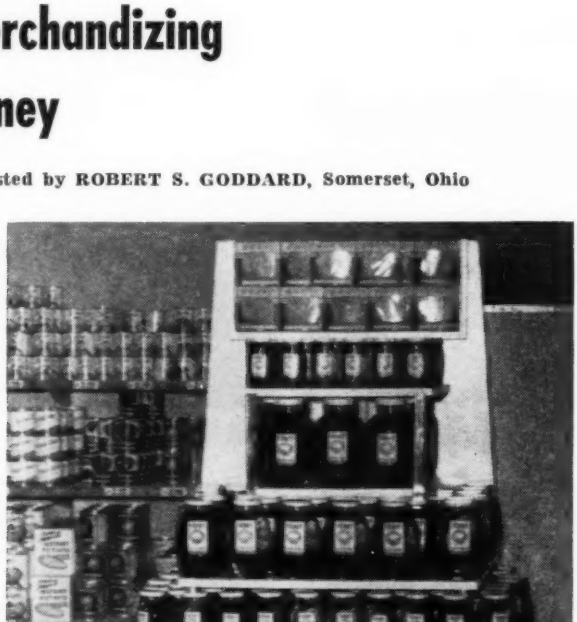
If, after your August 1st "survey", all factors are corrected so each colony has a young queen, ample bees and brood, some reserve honey and pollen, and said colonies are given a fall flow, or fed the necessary 60 pounds of honey, you should have your wintering problem licked. There will be nothing left to worry about except spring management.

XUM

Some Highlights on

Merchandizing Honey

suggested by ROBERT S. GODDARD, Somerset, Ohio



This display is well-arranged and well-lighted.

IS STORE-DOOR DELIVERY the answer to your marketing problem? It could be—under certain conditions.

A quality product, neatly packed in a container designed specifically for honey, with a label that emphasizes the word HONEY, and the type (in our case, CLOVER HONEY), should be used.

Although still considered to be seasonal in sales by many, honey outlets should be serviced through-

out the entire year to establish a sound, reliable market. By stocking shelves at regular intervals, a neat, fresh appearance can be kept, while jars showing granulation can be replaced. Personal contact with store managers and their help usually results in better display and location in the stores. If you're a "price cutter" stay home. Usually "price cutters" lose out in a short time, but their effect on the market is bad. As a rule their pack will be inferior because a quality product in any type of merchandise costs money.

Applying a "quality control" to your honey, with a full year's supply back of you for the outlets you are to service, you are ready to start on store-door delivery. Many times it will be necessary to have at your disposal the output of several beekeepers to assure such a supply. Any honey that does not measure up to your "quality control" should be sold to industrial users. "Quality control" means color, flavor, and body.

Among the thousands of items in the average super market, honey is often lost. Mrs. Housewife is bombarded daily by other food products offering "10c off regular price," "buy the second for half price," etc. Entering this type of advertising means the loss of any additional revenue you could have made by store-door delivery, for honey prices are generally highly competitive to begin with.

Fluorescent Lighted Mass Displays

Only by the use of a mass display can you bring honey to the fore. But how can you sell the proposition to the store manager? We solved this by building fluorescent lighted displays.

The one that I like best is the floor display at the McClelland Kennard Co., super market in Barnesville, Ohio. The base, a metal cabinet with two shelves, is 36 inches wide, 35 inches high, and 26 inches deep. Fluorescent lights are suspended under each shelf.

The top unit, built more or less in the shape of a pyramid, consists of three shelves for extracted honey and a recessed shelf for comb, all mounted on a plywood back.

This display is aimed primarily for the sale of one and two pound jars, because the best selling height has been determined at approximately 50 inches. The comb honey has been placed beyond the reach of many squeezing fingers. Fluorescent lights extend vertically behind the shelves, ending just below the comb shelf.

When such a display is set up it presents a wall of honey six feet tall to Mrs. Housewife. Definitely she sees it. The entire display is painted with gleaming white enamel. It takes 12 or more cases of honey to set up, with no reserve to refill with until your return.

When displayed near at home the comb honey shelf makes an ideal place for a live bee display, just being wide enough and deep enough to take an observation hive.

Mrs. Housewife buys a jar of honey and then it's strictly up to the beekeeper whether she returns for another or not. We pack only grade A Clover Honey in jars, the balance of the crop going into industrial honey.

By leaving such a display up for four weeks only in an outlet, then moving it to another location, its cost is rapidly repaid by increased sales. Scores of new customers have tried your product and will hunt it out on the shelf thereafter, so the result of the display is reflected in sales long after it has been moved on.

"Dump" Display

Another type display is the so-called "dump" display, usually a heavy wire basket raised about two feet above the floor by special legs. Aisles in the store must be wide to use them and wherever possible use separate baskets for each size jar to avoid any "clearance sale" look. Usually they will move honey rapidly without the cost to the beekeeper of a lighted display.

Unusual ideas occasionally pay off. The use of a plastic "squeeze" bottle is becoming more and more popular. At one time I sold tens of thousands of small glass jars, holding just one ounce of honey, and retailing for five cents. Youngsters and adults alike bought them and increased sales of larger sizes were noticed. Remember that while lighted displays of a clean, sparkling honey have an eye appeal all of their own, the defects of an inferior pack are magnified.

XUM

BEES

Their Nests and Nesting Sites

as reported by GEORGE E. BOHART and WILLIAM P. NYE, U.S.D.A., Agr. Res. Serv., Entomology Research Branch, in cooperation with Utah Agricultural Experiment Station.

Fig. 1. Egg chamber from a bumblebees nest (opened for photograph).

Artisans of Many Kinds

NOWHERE is there greater diversity among bees than in their nesting habits. This applies both to their choice of home sites and to their architecture. Most bees construct their nests as burrows in soil or wood. They may place their brood cells singly at the end of branch tunnels or in linear series. Other kinds of bees merely partition ready-made burrows or other tubular cavities into a linear series of cells. There are also bees that occupy large cavities of various shapes. They usually arrange their cells in clusters or in flat combs. Finally, there are a number of bees that construct one or more cells in the open as independent structures. Thus, there are burrowers, borrowers, cave dwellers, carpenters, and open-air builders. Then, there are the many species of cuckoo bees that make no nests at all.

Brood Cells

The number of cells per nest ranges from one to many thousands. For solitary bees the maximum number is probably about 25. Some of the social sweat bees make only a few more than this. On the other end of the scale, the record holders are probably certain stingless bees that are supposed to construct several hundred thousand cells under ideal conditions.

Private nursery cells are the rule among bees. However, one genus of African carpenter bees raises its young in wardrooms formed by hollow stems or by the hollow interiors of giant thorns. Most species of bumblebees start their brood in wax chambers holding from 4 to 15 or 20 eggs, but they partition the quarters as the young develop (Fig. 1).

Nest Entrances

Ground-nesting bees sometimes conceal their nest entrances in loose sand under clods or in dense vegetation. However, most of them leave some kind of mound or other tell-tale mark at the entrance. **Nomadopsis** (Andrenidae) makes a mound with a shallow crater at the summit and a closed entrance. The alkali bee **(Nomia melanderi)** makes a conical nest mound with an open entrance at the summit (Fig. 2). A near relative, **Nomia triangulifera,** constructs a horizontal vestibule inside the mound leading to a closed entrance at the side.

Halictus farinosus also makes a side entrance, but she leaves it open and sweeps away a trail in front. **Anthophora pacifica** makes no mound but wears a deep trail in front of her concealed entrance. Bees of the genus **Emphor** (Anthophoridae) make a short, flared turret over the nest entrance and kick pellets of earth in all directions (Fig. 3). When the nest is complete, they break down the turret and use its fragments to plug the entrance. Related bees in

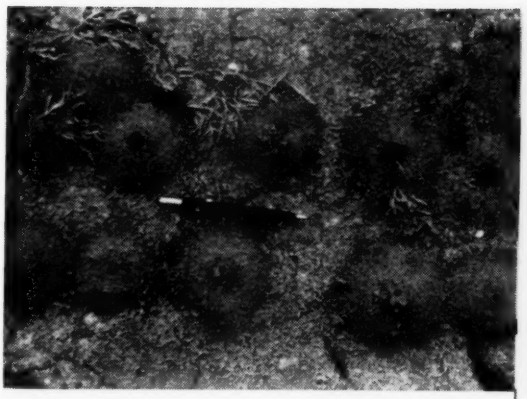


Fig. 2. Entrance mounds of the alkali bee (Nomia melanderi Ckll.).

the genus **Diadasia** build a cylindrical turret and leave it in place.

The nesting habits of bees often seem to fit in with their position on the family tree, but in some cases there is no apparent agreement. Some of the most striking nesting habits are more characteristic of individual genera, and even species, than of larger groupings. In general, we have tried to choose for the following discussion habits that are fairly consistent for large groups.

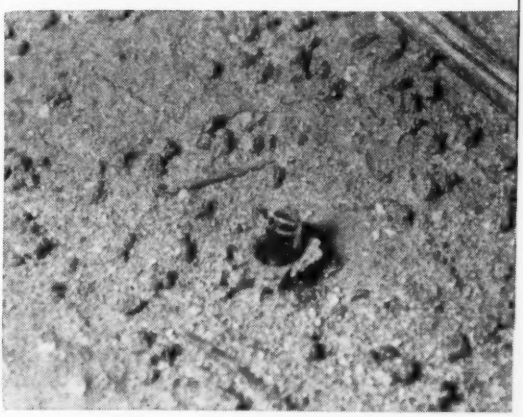


Fig. 3. Emphor sumichrasti (Cresson) entering turret surrounded by dirt pellets (photo by G. D. Butler).

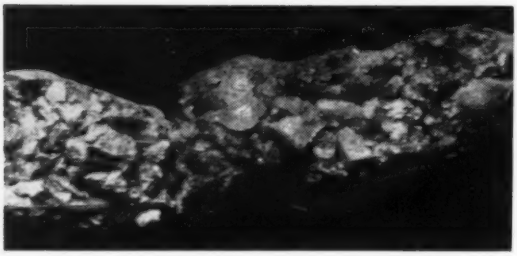
Colletids Make Their Own "Cellophane"

The primitive family Colletidae is divided taxonomically and biologically into two main groups. One group, rep-

Fig. 4. Nest of Hylaeus cressoni (Ckll.) in hemlock stalk. Note transparent, irregular cells.

resented principally by **Hylaeus,** is a borrower. It chooses hollow stems and old bee burrows or other tubular cavities. If you collect a few hollow stems containing **Hylaeus** nests and place them in a sheltered place with a large bundle of empty stems, the emerging bees will probably use the new stems

Fig. 5. Cells of Colletes phaceliae (Ckll.) showing transparent, jugshaped walls.



and build up a thriving population. The other group of colletids, represented by **Colletes,** digs its own burrows in the soil. Both have the unique habit of making delicate, transparent cells for their offspring. These are made from secretions of the maxillary gland and are probably fashioned with the broad, bilobed glossa. The cells of **Hylaeus** are irregular or conform to the nest cavity chosen (Fig. 4), whereas those of **Colletes** are shaped like vases (Fig. 5).

Halictids "Put the Squeeze on" at the Nest Entrance

The sweat bees (Halictidae) usually nest in the soil and dig vertical burrows with short, horizontal branch burrows that end in horizontal cells. Often the main burrow extends deeper than the cells. A few halictids, like the alkali bee and its relatives (**Nomia**), have burrows with the cells hanging down in series from one or two horizontal side burrows. Recently we observed a number of remarkable halictid nests (**Lasioglossum** sp.) constructed in the rotted cores of large timbers. The entrances were separate, but the cells were arranged in a labyrinth of interconnecting branch burrows that made no distinction between nests.

In spite of a few such divergent plans, it is easy to tell halictid nests by the burrow diameters. The entrances and the branch burrows are just wide enough to admit the bee, but the main burrow is considerably wider. Halictids apply a delicate varnish to the walls but not to the ceiling of their cells. As in the colletids, this lining is secreted by glands in the head and is applied with the mouthparts.

Fig. 6. Unvarnished cell of Nomadopsis scutellaris (Fowler) with pollen ball apparently coated by a waxy substance.

Fig. 7. Nest tube composed of three cells of Dianthidum curvatum sayi (Ckll.) taken from burrow of Anthophora occidentalis (Cresson). Cell walls composed of gravel and other debris cemented with sunflower resin.

Andrenids Are Secret Miners

The andrenids are all burrowers. Most of them make long, twisting tunnels with long branch burrows ending in single vertical cells. Some species have conspicuous nest mounds in the open (especially **Nomadopsis**), but most of them practice the art of concealment. Species of **Andrena** often crawl under several inches of loose sand or ground litter before starting their vertical burrows.

Andrena lines her cells with a fine varnish, but **Nomadopsis** paints the varnish on the pollen ball instead (Fig. 6). The andrenids usually close the burrow entrance when they leave for the field, and some species close it while they are in the nest. In this they differ from many of the halictids, which leave the nest entrance wide open.

Melittids—Their Labors Go Unheralded

The Melittidae is too small a family on this continent to merit much discussion in a brief survey like this one. For the most part its nesting habits resemble those of the Andrenidae, which family it rather closely resembles. Some members of this family have larvae that spin cocoons. Otherwise this habit is reserved for the four higher families. Strangely enough, cocoon spinning is common among the sphecid wasps, which are supposed to be the ancestors

of bees. Was the cocoon-spinning habit retained among ancient members of short-tongued families until it could be passed on to the forerunners of the higher families? Or did it disappear altogether, only to reappear independently among the higher bees? Could it also be argued that the peculiar distribution of cocoon spinning on the family tree shows that we will have to build

Fig. 8. Brood cell of Ceratina sp. in hemlock stalk. Note pith plug, pupal bee, and fecal pellets.

another tree? You can see that many questions remain unanswered.

Megachilids—Master Craftsmen

The family Megachilidae, which includes the well-known leaf-cutting bees, has the fascinating habit of lining its brood cells with specific materials. According to the genus (and in many cases the species) of bee, some of the materials used are: leaf or flower pieces; leaf pulp; resin, resin and leaf

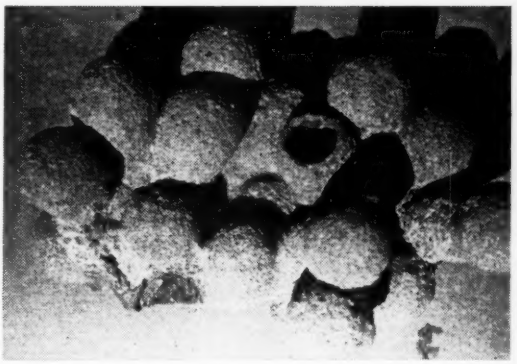


Fig. 9. Cell cluster of Diadasia enavata (Cresson) (worm's-eye view).

pulp, resin and gravel (Fig. 7); mud; mud and leaf pulp; and stem hairs. The artistry, industry, and individuality which megachilids show in the construction of their brood cells contrast sharply with the simplicity of their nest pattern. Most of the species merely borrow ready-made burrows in soil, wood, or stems and place in them a linear series of cells. Sometimes the cells are fitted into spaces between clods of earth or in shallow rock depressions. Some of the resin bees use limb crotches. In general, the more simple the megachilids make their nests, the more care they lavish on their brood cells. After the larvae have finished feeding, they further protect themselves for the coming periods of hibernation and transformation by spinning tough cocoons composed of fibers embedded in a stout varnish.

Like the honeybees, many megachilids place their provisions and eggs in the empty cocoons of preceding generations. Once we found eight cocoons neatly nested into a single cell. The bee that emerged from the final cell was perforce less than half the size of many of its fellows.

Xylocopids Earn Their Name

The carpenter bees (family Xylocopidae), as the name implies, construct their nests in wood. The small carpenter bees (**Ceratina**) usually choose hollow stems, but they also tunnel through pithy stems when necessary. The cells are arranged in linear series. They have no special lining and are separated by plugs of pith and fibers scraped from the walls of the nest cavity (Fig. 8).

The large carpenter bees (**Xylocopa**) may use hollow or pithy stems such as bamboo or century plant, but they also drill through solid timber when easier methods are not available. These nests have short horizontal branches across grain and long parallel burrows with linear series of cells running with the grain. Sometimes their extensive galleries seriously damage building supports and other structures.

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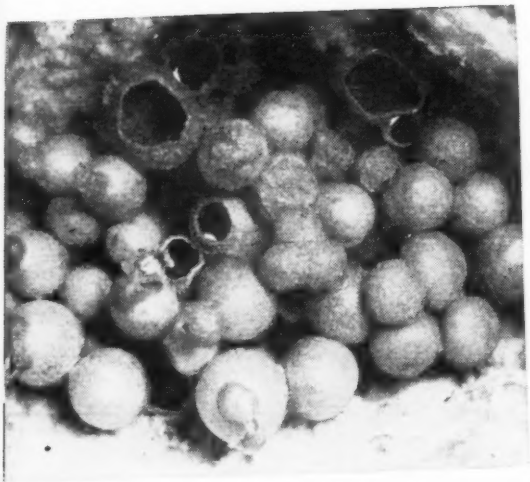

Fig. 10. Inner lining of Emphoropsis cell composed of a plaster-like anal secretion.

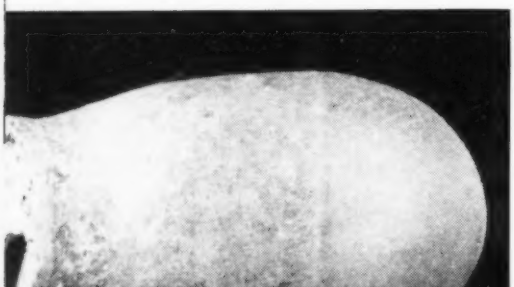

Fig. 11. A bumblebee nest (Bombus morrisoni Cresson) showing (a) pollen pot, (b) original honey pot, (c) honey stored in old cocoon, (d) egg baskets, (e) cluster of three wax brood cells, (f) cocoons, (g) mattress lined with wax.

Anthophorids are Diversified

The family Anthophoridae is a large one, diverse in nesting habits as well as body shape. Early on the stem of anthophorid evolution there appeared the ancestors of a large stock of parasitic bees. These cuckoo bees build no nests, but if you ever follow a female searching for the nests of her host you will come to respect her diligence. We can guarantee that your patience will never match hers.

Nearly all of the nonparasitic anthophorids nest in the soil. However, a few species of **Anthophora** nest in decaying wood, and at least one gnaws its burrows into sandstone. In general, the more primitive anthophorids, such as **Melissodes** and **Tetralonia,** place single cells at the ends of branch burrows. The more advanced forms have linear series of three or four cells placed in short branch burrows. Sometimes the arrangement resembles a cluster of grapes except for the attachment of one cell to the next (Fig. 9). **Anthophora** and its closest relatives line their mud cells with a white shell-like substance that appears to be secreted from rectal glands. The impervious shell holds the watery syrup that covers the pollen in the cell (Fig. 10).

Conspicuous features of many **Anthopora** nests and those of **Diadasia** and its relatives are the clay turrets guarding the entrances. Some students of bees believe they are for protection against those egg bombardiers, the bombyliid flies, but the protection seems to be inadequate at best.

The Apidae—Workers in Wax

The family Apidae is the most highly advanced of the bee families in structure, nesting habits, and social development. Strangely enough, the tropical **Euglossa** and **Eulaema,** which are among the most highly developed apids structurally, have no true social development and make their cells in clusters much like those of certain anthophorids.

The nests of other apids are characterized by two main features—wax cells and the aggregation of many cells into flat combs. The bumblebees **(Bombus)** and the tropical stingless bees **(Melipona** and **Trigona)** place their cells vertically on the upper sides of horizontal combs. The honeybees **(Apis)** orient their cells nearly horizontally on both sides of vertical combs, thus conserving space and eliminating the weight problem encountered when many combs are piled on top of each other. There may be only one comb, as in the case of the giant honeybee of India **(Apis dorsata)**, or many, as in the common honeybee.

The bumble bees generally have one active brood comb composed of several brood clusters. The cocoons of older

(Continued on page 508)

What Happened to

TENNESSEE BEEKEEPING?

by GEORGE H. REA, Reynoldsville, Pa.

PREVIOUSLY TO 1911 my knowledge of beekeeping in Tennessee was gained by reading accounts of doings of beekeepers there and the nature of its honey flows as found in bee journals and books. In midsummer 1911 I was happy to find myself going to Nashville as a delegate from the Reynoldsville, Pennsylvania, Baptist Sunday School to an International convention of the then-great Sunday School organization Baraca- Philathea. While there I could not resist the opportunity to visit a queen breeder of national fame, John M. Davis of Spring Hill. I had read about his improved strain of Italian bees that he had selected for special good qualities. Having bought some of his queens for colonies of my own, I had high regard for him and his prolific bees. While other convention delegates were on a sight-seeing tour one day, I found transportation to Spring Hill and had a delightful visit with this remarkable man.

His greeting was surprising but characteristic of his friendship and good humor; characteristic also of the times while many veterans of the War Between the States, both north and south, were still living. While "D--- Yankee" used to be directed my way often, there was always a depth of humor and friendship unsurpassed anywhere in my travels.

From Davis and others, and by subsequent trips into Tennessee and other states, I learned of the fine honey crops and expansion of modern beekeeping in what was then a great belt of millions of acres of sweet clover that existed on the lime stone soils of middle Tennessee from the Tennessee River on the west to the Cumberland Mountains on the east and north to south across the entire state. This great sweet clover belt existed also south into northern Mississippi and half way down through Alabama and northward through Kentucky and Ohio.

Sweet clover was a great soil builder and preventer of soil erosion and a bonanza for beekeepers. It produced great crops of water-white honey of appeal to the consumer trade. Farmers sowed the sweet clover seed in the fields. Birds and winds spread it over pasture lands and waste places, and some beekeepers scattered the seed along the roadsides. The fact is that sweet clover became popular and was spread all over the United States and Canada, but it did best in deep alkaline or limestone soils.

In this great southern sweet clover belt, Tennessee beekeeping reached a high peak of prosperity through a period of many years as recorded in beekeeping literature. While there is no definite line of demarcation, and one is hardly necessary for the purpose of this story, a decline seems to be indicated in the late 1920's which gained momentum until in about ten years sweet clover as an important honey plant in those same southern states, Tennessee included, had disappeared to all practical beekeeping or farming purposes. A disease commonly known as "root rot" destroyed so great a source of income in so short a time. Beekeeping could not and did not recover in that great area until after the farmers turned to the extensive growing of other beneficial legumes, crimson clover and vetch which also supply plentiful nectar for the bees as well as to enrich the soil and supply abundant pasture and winter food for cattle.

With the going of sweet clover the beekeepers, having no other dependable source of profitable honey crops, had

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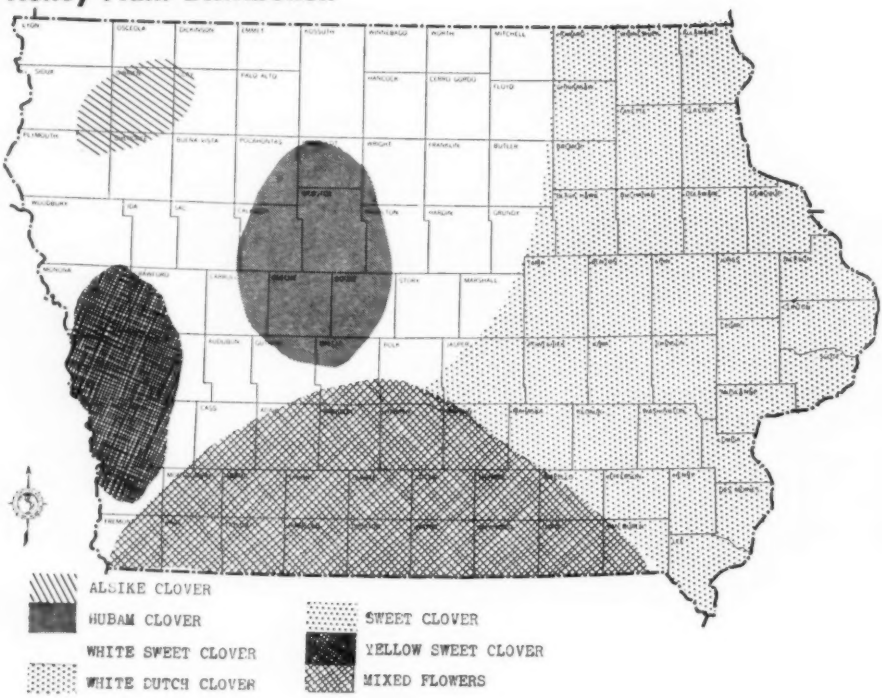
Honey Plant Distribution



Beekeeping in Iowa

F. B. PADDOCK. State Apiarist
Ames, Iowa

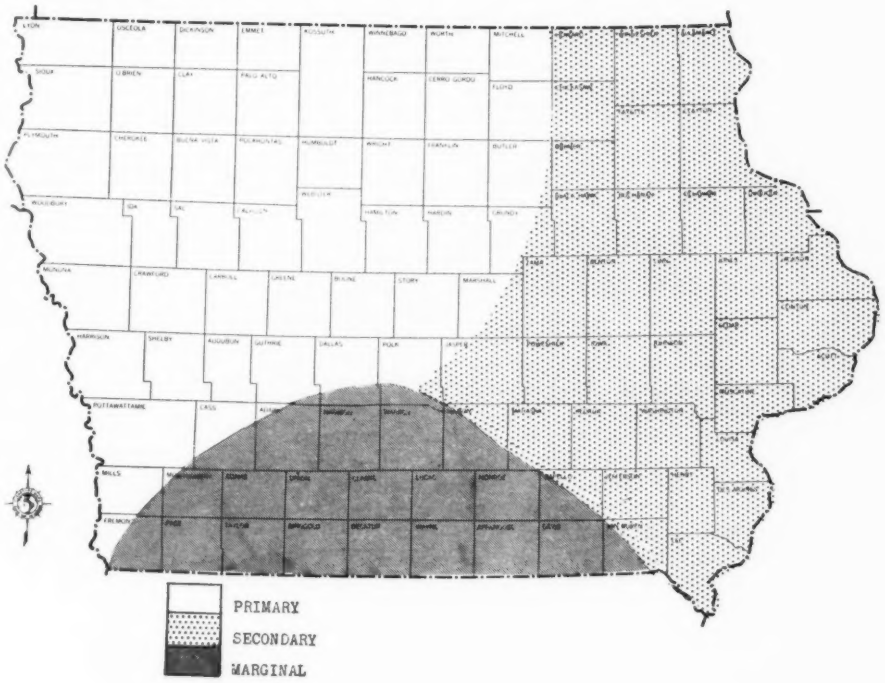
THE HISTORY of bees in Iowa really antedates the settlement of the area by white man. Records indicate that the Indian terminology of the white man's fly was rather common in those early days. In fact, a rather accurate time table had been set up by the presence of bees for they indicated to the Indian that in approximately three years the white man would be ready to take over his land.

1835 - 75 Years

History records organized expeditions originating in Illinois for the purpose of penetrating into the wooded sections of southeastern Iowa to hunt bee trees. These expeditions were by boat up the Des Moines River and its tributaries. The honey thus obtained was placed in barrels manufactured on the spot and the product was taken back to Illinois for sale. Carthage, Illinois, is one of the towns referred to as the first place of sale for the honey which was obtained by the expedition.

The spread of bees in Iowa was much more rapid along the southern half than through the northern half of the state. It seems that the immigration into the state was at the southeast corner and spread across the state was undoubtedly influenced greatly by the trek of the Mormons who were interested primar-

Beekeeping Areas



ily in agricultural development rather than merely reaching California for gold. They had a very interesting trait of making simple provisions for followers along the trail in the way of agricultural establishments. Bees were quite well established along the Missouri River and especially in the Council Bluffs area long before bees had reached as far west as Ft. Dodge in the north central part of the state. There was a question expressed at that time as to whether bees could ever maintain themselves in the vicinity of Webster City and Ft. Dodge was referred to as the limit of civilization. Later a hardy soul at Algona lamented the inability to maintain bees on those endless prairies.

Bees constituted a vital element in the prosperity of the early settlers as the agriculture of Iowa developed. It must be recalled that these settlers established agriculture on a basis of self-sufficiency units. These folks immediately provided for their needs of fruits and vegetables and their needs of legume seeds as a part of the family welfare and not only for the production of fruit and legume seed but for the production of honey as an item of food. Bees were considered an essential part of the unit farm operations.

Many very interesting stories have come from that period of establishing beekeeping in Iowa, especially in the eastern one-third of the state. It was in this area that native flora, especially trees, were abundant enough to serve well for the bees in their maintenance and development. It was at this time that basswood trees provided a large proportion of the surplus honey of the state. Later, the increased acreage of white Dutch clover was felt in the honey production through surplus which increased from barely 10 per cent in the early days to approximately 90 per cent at the end of this period which has been set up as of 1910 or the beginning of the 20th Century.

It was during this formative period that many beekeepers in Iowa assumed national reputation and made their contribution to the development of the beekeeping industry of the United States. Beekeepers' meetings at that

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time constituted an important item of social welfare and development of the population. It is interesting to recall how one prominent beekeeper from Sioux City walked to Ft. Dodge for a state meeting. Special cars were attached to the regular trains to take folks from a community to a state meeting. Regional meetings as well as state meetings lasted for a period of three days, with discussions running the entire gamut of beekeeping management. The interesting thing is that the topics have changed but little in 75 years.

All of this development was brought about by relatively small beekeepers. There were occasional extensive beekeepers for that time operating from 100 to 200 colonies of bees. Of course, the restricting factor was that of travel to outyard locations. There was still the hangover of the contribution of a relatively small number of colonies to the prosperity of the individual and the immediate community. Backlot beekeeping probably reached its height in the very early years of the 20th Century with the peak probably in 1910. By this time, basswood was decreasing in importance since clearings had been made and basswood had been used as a valuable timber in residences and business construction. In fact, much basswood had been shipped either as logs or as finished lumber to eastern markets. The value of white clover was appreciated since it accounted for the bulk of the surplus honey production. It must be recalled that honey production at this time was basically section honey production. Also, that the basis of honey production was the 8-frame Langstroth hive.

1910 - 30 Years

The industry was about ripe for a change in fundamentals with the outbreak of World War 1. There were at least three factors which contributed to the complete change in the honey producing industry of Iowa.

Backlot beekeeping was about outgrown. The automobile facilities were making it possible to develop a system of outyards. The disappearance of basswood was still in the picture, the increase in white clover had about come to an end. But there was an important introduction, especially in the western part of the state, of white sweet clover from the Dakotas. Then there was the wartime need of honey as a food.

These factors resulted in quite a complete changeover from backlot beekeeping to outyard beekeeping, from section honey production to extracted honey production and a greater dependence upon sweet clover for surplus production. This opened up a vast area which had not been extensively available to honey producers, the northwestern one-third of the state with Sioux City as the pivotal center. Old beekeepers have reported that they could place 200 colonies of bees at every two-mile intersection or therabouts almost any place in Woodbury County or adjacent territory in those days represented by the war activity, especially from 1910 to 1920 and possibly extending to 1930. Outyard management reached its peak during this period in the western third of the state. It was during this time that individual moveable honey houses, built on an outyard capacity, were developed. Extracted honey production lent itself most effectively to the type of management which, in turn, incorporated very rapidly the use of the two-story, 10-frame hive for colony buildup and the use of deep supers which could be interchanged at any time for brood use or the storage of extracted honey.

The period of 1930 to 1940 was difficult for many in agriculture as well as in other lines of production and industrial activity, called the "depression years". The demand for honey decreased. In fact, it was a luxury item. And in Iowa, agriculture began a tremendous reorientation with the inauguration of the program now called the Soil Conservation Program. Many will recall how acres were taken out of corn production and supplemented with legume production. This seemed to carry a possible revival for honey production but it proved to be setting the stage only for an increased and improved production of corn and additional row crops, especially soybeans.

It was during this period that white Dutch clover practically disappeared as a honey producing plant. There was considerable question as to the factors which brought about this decrease in the acreage of white Dutch clover. Basswood had practically disappeared as a honey producing plant. Basswood trees were now a novelty and were seldom recognized by the younger generation. They are merely a matter of

history. During this period, there was an increase in a new plant which was received by beekeepers with great excitement, the Hubam clover. It reached the proportions of a very fine honey plant in some restricted areas. But agricultural technology has now relieved us very largely of this source of honey.

1940 - 10 Years

It was during this period that sweet clover had also declined since the World War II requirements called for more row crops in agriculture, especially corn and soybeans. Through the Federal program for agriculture, Iowa was called upon to make a greater percentage contribution to the increased production of these row crops than was any other state. This was done on the basis that the land of this state was better adapted to make the shift to row production than was the land of most other agricultural states. Thus the contribution of Iowa to the overall agricultural picture has had a tremendous rebound on the honey producing industry of the state.

This period of agricultural technological development has continued up to the present time with a possible series of contributing factors since 1950. The decrease in the acreage of legumes has continued up to the present time in favor of the production of row crops. There has been an effort made to throw this trend in reverse but it has not been successful. Thus we have seen a constant and accumulative decline in the acreages available in legumes.

1950 - ? Years

There has been a very serious factor in the disappearance of sweet clover in the form of the weevil. It is possible that the decline would have been greatly tempered if the weevil had not appeared at the time it did, but the desire to incorporate sweet clover in any legume planting or crop rotation was almost eliminated as a result of the ravages of the weevil. Hubam clover is used to some extent but it is usually plowed under so early in the fall as a green manure crop that no bloom is available. The sweet clover which is now available is of a vastly different character than the type which came into the state 50 years ago. Now the plant is a low growing, early maturing variety with a relatively short bloom period. When it is available along right-of-ways and escaped patches, it produces an abundance of honey. Unfortunately, the development of agriculture calls for the minimum of production of legume seed since there is a tendency to develop specialty production.

The need for more production and, as a segment of agricultural technology, more land has been brought under cultivation. This has been through the drainage of so-called sloughs, straightening of minor streams, and improved fencerow management. Also associated with this is the highway development which calls for unobstructed views and clean shoulders to assist in avoiding accidents. So that the old native flora which was available to bees in the spring as so-called spring flowers and the flowers which might come on in the fall, including the famous smartweed or heartsease, has been largely eliminated.

Thus we have seen the history, the development, and the maintenance of the honey industry in the state of Iowa. Beekeepers as a vital part of agricultural production have found it necessary to make adjustments in location and in type of honey produced. It is interesting, on the other hand, that honey production has been widespread over the state as a part of a high type of agriculture.

This shift in the availability of honey plants must be recognized by the beekeeper. It may mean quite a change in operation of colonies. It may mean smaller yards and yards closer together. It will undoubtedly mean more attention to recognized principles of colony management. It will mean conservation of pollen resources. It will mean more careful attention to the management of the colony in preparation for honey flow. It will mean more attention to the problem of wintering to reduce the losses which have been experienced. It may mean more extensive use of package bees. In all, it will necessitate reappraisal of the problems of honey production in the face of the existing availability of nectar resources. In times of stress, it will only be logical to expect that inefficient production will cease to maintain the operator in production. It will be a time when the efficient producer will be able to carry on effectively.

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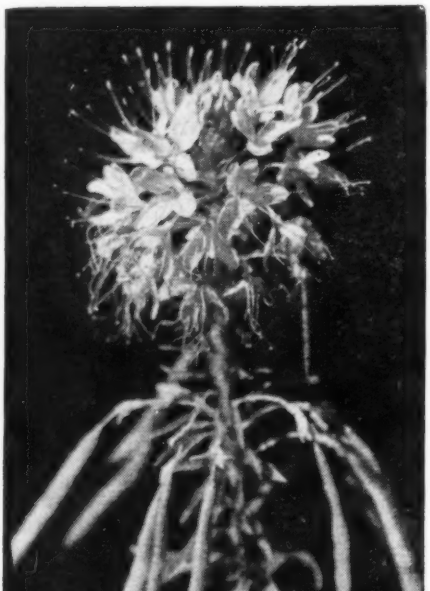
Let's Talk about Honey Plants

HARVEY B. LOVELL, University of Louisville



Rocky Mountain bee plant (Cleome)

Rocky Mountain bee plant (Cleome serrulata). I am always intrigued by plants that have bee or honey in their name, since this seems to imply that they are especially valuable to the beekeeper. One of the best known species is the Rocky Mountain bee plant or spider flower which has great clusters of pinkish flowers, six long spreading stamens, and long stalked pods which appear to grow out of the center of the flowers as they wither. Nectar is secreted in abundance and there have been several attempts to plant this species and it is still frequently listed as among the honey plants worth cultivating for bee pasture.

However, since it is otherwise a weed and is not readily eaten by cattle, there is little likelihood that it will ever prove popular. In Colorado where it is most valuable, it is erratic in growth and is not considered of major importance according to Joseph Moffett, Ft. Collins. It is said to produce an occasional surplus around Bayard, Neb., according to Charles Cavett, and Glenn Perrins lists it as a minor source of honey in Utah. Frank Hildebrand of Laverna, Oklahoma, once moved his bees into an area in the Panhandle where Rocky Mountain bee plant was common and stored two to three supers per colony in three weeks.

Yellow bee flower (Cleome lutea), or yellow cleome, is another species which is much visited by bees where it is sufficiently abundant. W. G. Rodda, Hermiston, Oregon, writes me that yellow cleome is a good producer of light-colored honey but does much better in alkaline soils. He adds that he has an acre or so of this plant. Oscar Poe told me that yellow cleome is often common along the roadsides in southern New Mexico and bees work it freely. Yellow bee flower is generally found in semi-desert areas where it lies dormant in dry weather but after a wet winter it germinates and the desert becomes yellow with the bloom.

The following species have honey in their name: honey-vine, wonder honey plant, Simpson honey plant, Chapman honey plant, golden honey plant, honeysuckle. Bee balm, bee brush, bee sage, and beeweed have been so named because they are so attractive to bees. Still other species have sweet as part of their name such as sweet clover, sweet pepperbush, and meadowsweet. Anyone using honey or bee as part of the name of a honey plant in their locality, won't they please write me about it giving a description of the plant?

Colorado. In a recent letter, John Haefeli of Monte Vista, speaks highly of dandelion as a nectar producer. He obtains up to 50 to 60 pounds of strong, golden yellow honey which he considers good for spring build-up and winter stores. He also lists mountain vetch which he writes blooms from May 1 to June 15 and adds that the amount it yields depends entirely on the moisture in these semi-arid areas.

Ohio. On a trip completely across the state from June 11 to 13, the writer

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Tasty Treats

MRS. BENJ. NIELSEN
Aurora, Nebraska

Frosted honey ice cream balls. — Photo courtesy Kellogg Company.

HARD PRESSED for something to tempt drooping appetites? Something tasty, taking not too long to prepare, and not heating up the kitchen too much? Here's something small fry will adore and festive enough for company fare! And, if you always make a practice of keeping your favorite honey ice cream "aging" in the refrigerator you will never be embarrassed when summer-time guests drop in unexpectedly. These ice cream balls are so easy to prepare! Simply roll scoops of ice cream in frosted flake cereal and there you are!

How's your supply of honey toppings? Here are two quickies to try. And don't overlook honey sweetened strawberry topping!

So when appetites droop and you wonder what to fix next, try these honey treats.

Honey Ice Cream

Two eggs, ⅓ to ½ cup honey, 1 teaspoon vanilla, 1 cup scalded milk and 1 cup heavy cream, whipped.

Beat egg yolks until thick, adding honey gradually. Beat in vanilla and hot milk. Chill. Fold in stiffly beaten egg whites and the whipped cream. Pour into freezing tray and freeze until firm. Serves 6.

Honey Peanut Butter Sauce

Three-fourths cup brown sugar, ⅓ cup honey, ¼ cup water, ¼ cup butter, 3 marshmallows, ½ cup evaporated milk and ¼ cup peanut butter.

Combine brown sugar, honey and water in medium-sized saucepan. Cook over low heat, stirring constantly, until the sugar is dissolved. Continue cooking without stirring to 236 degrees F. (soft ball in cold water). Remove from heat. Add butter and marshmallows. Cool slightly. Stir in milk and peanut butter. Yield: 2 cups sauce.

Honey Chocolate Sauce

Six ounces semi-sweet chocolate chips, ½ cup honey, ⅛ teaspoon salt and ¾ cup evaporated milk.

Melt semi-sweet chocolate chips over hot water. Add honey, salt and evaporated milk; blend. Serve warm over ice cream, or store the sauce in a covered jar in the refrigerator. When ready to serve reheat it over hot water. Yield: 1¾ cups sauce.

Our Cover Photo

The photograph of gaillardias by J. H. Staby is a strong-scented annual with yellow and red flowers. Bees are attracted to them in late summer when but little other forage is available.

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Editorials

Budget for Honey Research Increased

WORD HAS JUST reached us from the Director of Utilization Research that in the fiscal year 1957 the budget for research on the utilization of honey, to be conducted by Dr. J. W. White, Jr., Eastern Utilization Research Branch, will be increased by $25,000. This means that $50,000 is now budgeted rather than the original amount of $25,000. This amount should enable research workers to lay the foundation for a worthwhile piece of work on honey. Such work is sorely needed by our industry and it is hoped that further appropriations may be forthcoming when needed.

Let's Have a Uniform Bee Law

IT SEEMS that each state is a law unto itself when it comes to bee laws. Why can we not have a bee disease law that applies to all states? This would simplify moving bees from one state to another, when such seems desirable. Some commercial beekeepers live near a state line and have apiaries in more than one state, perhaps in two or three states.

In our opinion state lines should not constitute a barrier for the movement of bees, so long as the owners comply with requirements.

Again we say, "Let's have a uniform bee disease law that will fit all states."

"The Weather — Again"

WHEN BEEKEEPERS fail to get a normal crop of honey they can always blame the weather. In some instances their failure may not be due to the weather, but rather, to faulty management.

However, in this area the weather can be blamed, to quite an extent, at least, for colonies of bees not being up to par in strength, also for the small amount of honey now in the hives.

During the spring months when fruit bloom and dandelion were in bloom, the weather was too cold and rainy for bees to take advantage of this bloom. Most colonies gathered enough nectar and pollen to stay alive, although some bees had to be fed.

In this section of Ohio, copious rains that came during May and June have resulted in an abundance of white Dutch clover in the pastures. If we do have a day when the sun shines and the temperature gets up around 80 degrees for a few hours, bees will be found working this white clover. In areas where sweet clover is found, bees have been getting some surplus from this source.

Someone predicted early in the season that we would have a cold summer. We hope this prognosticator is wrong. Time will tell. This is July 6th and we are hoping that the weather man will give us a break so that bees may take advantage of clover and basswood bloom. In about a month from now we can tell you more about what happens.

American National Honey Show

THIS IS SPONSORED by the Illinois State Fair and will be held August 10th to 19th in Springfield.

The judges will be Dr. W. E. Dunham, Ohio State University, Columbus, Ohio, and Miss Mary Perisho, Paris, Illinois. Carl E. Killion, Paris, Illinois, is Secretary. The rules and regulations of the show are set forth in a small booklet or bulletin and may be obtained from Mr. Killion.

Thousands of people visit the Illinois State Fair each year and many of these people will see the different kinds of honey on display. State fairs present an excellent opportunity for bringing honey to the attention of people who might not otherwise be brought in contact with honey on display.

It is hoped that other states will feature a honey show in order to develop a consumer interest in our product. As a rule, these displays mean a great deal of work and the management usually falls on the shoulders of a few interested beekeepers. Honey shows need not be confined to state fairs. County fairs also can sponsor honey shows.

If beekeepers throughout the country would become more interested in putting on honey shows the demand for honey would be increased measurably.

Beekeeper's New Year

WITHIN RECENT YEARS this phrase has come into rather general use and it refers to the month of August in the northern hemisphere, as a time for starting preparations for securing a maximum crop of honey the succeeding season. In the southern hemisphere, which is approximately six months ahead of or behind our season, the month of February would be the beekeeper's new year.

It seems quite essential that beekeepers who wish to have bees winter successfully, then build up into populous colonies ready for all honey flows that materialize the following season, should begin during August to supply all the requirements for building up populous colonies to go into winter quarters. To be assured of populous colonies, each hive of bees should have a prolific queen.

The most common cause of winter losses in the North is starvation rather than severe winter weather. A colony which is very populous in bees and has an adequate amount of well-cured honey properly placed in the hive will withstand the rigors of a severe winter provided it gets one or two cleansing flights.

A number of beekeepers in the North kill off their bees in the fall, saving combs containing honey and pollen in single-story brood chambers for the installation of package bees the following spring. Such beekeepers need not bother about the beekeeper's new year nor wintering problems. They may have to worry about getting packages of bees at the right time in the spring and getting them installed properly. Furthermore, these beekeepers must allow for an expenditure of cash for package bees and queens and for express charges which are high at the present time. It should also be said that there is considerable labor connected with killing off bees with Cyanogas in the fall and removing them from the hives, then storing the hives mouse proof in a building during the winter, then placing them on their summer stands the following spring in time to install packages when received. Whichever method is followed, the beekeeper must look ahead in order to have colonies up to their peak of strength to secure maximum crops.

Be Sure to Order Honey in Restaurants

NOT LONG AGO when we were having a meal in a restaurant we asked the waitress if they served honey. She gave us sort of a blank look and finally in a somewhat diffident tone of voice said they didn't.

We are reminded of the story Dr. J. E. Eckert of California tells about being in a restaurant where he asked the waitress if they served honey and she replied, "No, honey".

We do find that some of the larger city cafeterias are offering both comb and extracted honey along with the tempting dishes that are vying with each other for the customer's dollar. If all beekeepers who patronize restaurants or cafeterias would ask for honey if it is not on the menu, the proprietors would become more honey conscious and might eventually include it on their menus.

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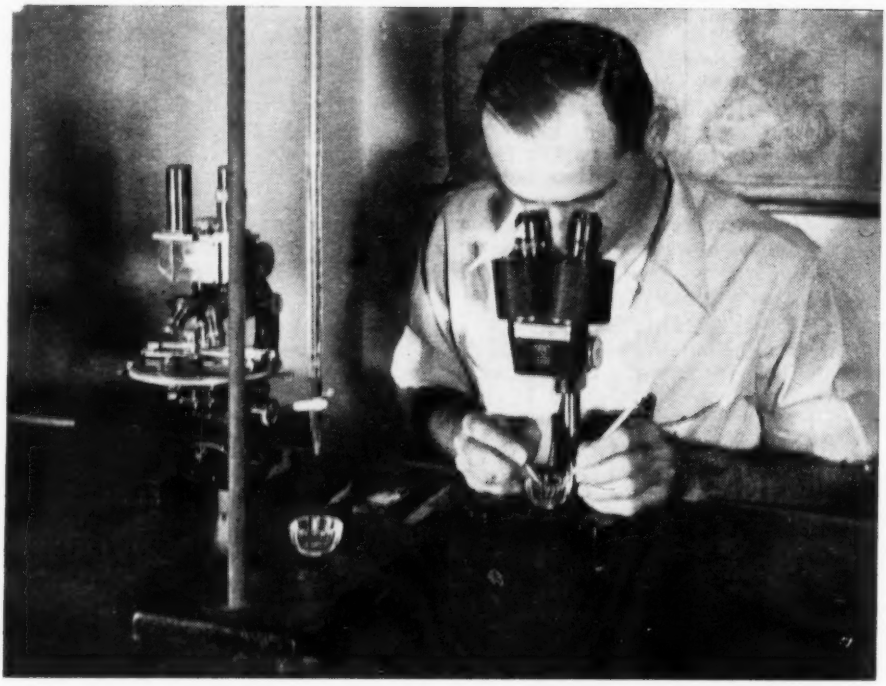
News Reel



Dr. Otto Mackensen, apiculturist at the U. S. D. A. Southern States Bee Culture Station, Baton Rouge, La., using a dissecting needle and forceps, breaks up the spermatheca from an instrumentally inseminated queen bee to disperse sperms in water.—U.S.D.A. photo by Forsythe.

An apiary in a small garden near Hull, England.—Photo from D. H. Bone.

OPERATION BEE — Mr. George Watkins and his father, R. A. Watkins of Mill Valley, Calif., remove bees from the siding of a house in which the bees had lived for 15 years. Two long boards were taken off the studding, with much noise and angry bees. The bees had stored approximately 100 pounds of honey and pollen, most of which was tied into frames for their immediate use. The swarm produced a surplus of 60 pounds of bulk comb honey which was sold at $1.00 per pound. New occupants in the house had just arrived from Egypt and were a bit startled to find the house already occupied.—Photo by The Record, Mill Valley, California.

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FROM Foreign LANDS

Translated and Edited by Erika Barth

Bees and Their Footsteps

ANTS HAVE BEEN KNOWN to build tracks to and from their camp sites. Under certain circumstances do honeybees follow the same pattern? Jacques Leconte, beekeeping scientist at the Station de Recherches Apicoles de Bures/Yvette, in France, became curious and after some experiments came up with some interesting facts.

Beekeeper Leconte found that after a beehive had been turned by 180 degrees, homecoming foragers showed two different ways of behavior. A small number of bees quickly found the entrance again while a greater number of returning foragers built a "track" from the former place of hive entrance to the real or new one. Such tracks, resembling those of ants, may exist for about three weeks.

Zeitschrift fur Bienenforschung. Apr. 1956.

Don't Poison Bees

IT SEEMS that a new use for honeybees is brought to light every month. More and more plants are dependent on honeybees for pollination. To insure efficient pollination, beekeepers must always be alert against possible spray damage to apiaries. The English Ministry of Agriculture, Fisheries, and Food, realizing the value of honeybees advises the following precautions to avoid killing bees:

1. Don't use insecticidal sprays or dusts on open blossoms in orchards or on seed crops in flower.
2. Carry out chemical weed control in cereal crops before the weeds reach the flowering stage. This applies particularly to charlock, whose flowers are very attractive to bees.
3. Never use arsenic in orchards except (a) before the flower buds open and (b) after complete petal fall. It is deadly to bees.
4. Clean cultivate or gang mow orchards immediately before applying poisonous chemicals.
5. Avoid letting sprays and dusts drift onto hedgerow flowers or neighboring fields where bees are foraging.
6. Take care not to dump waste chemicals or empty containers where they might contaminate ponds or other places likely to be used by bees for drinking.
7. Beekeepers should be on the lookout for local crops liable to be treated and should approach the growers about the timing of pest control operations or to obtain a warning of impending action.

British Bee Journal. April 19, 1956.

Queen Substance

WORKER BEES are reported to obtain, by licking the body of their queen, a "queen substance", which inhibits development of the workers' ovaries. The "queen substance" from a mated queen is obtained by extracting the body with alcohol. This substance also inhibits ovarian development in ants.

In a recent article "The Queen-Substance of Honeybees and Ovary Inhibiting Hormone of Crustaceans", D. B. Carlisle and C. G. Butler have shown that this hormone can inhibit the development of ovaries in shrimp. It is also reported to be stable to heat and acids and soluble in acetone and alcohol. It was interesting to note that an extract from the sinus gland of the eye stalk of shrimp, will inhibit ovarian development when fed continuously to newly emerged bees.

Nature. Feb. 11, 1956.

Honeydew from Rye

DR. H. HIRSCHFELDER has just published an interesting report on his observations on honeybees working rye. This is a new report concerning a rare flow. Generally, most honeydew comes from evergreen sources.

During the summer of 1955 bees in

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Live and Learn

by Propolis Pete

IF YOU REMEMBER, last month I left you with a promise to unite a problem colony that didn't have a queen. I had every intention of doing just that the next day, but when the next day came half a dozen other things cropped up, with the result that it never got done. In fact a week went by before I got around to it. Then, to make sure that I was doing the right thing I looked again, and guess what I found. Right the first time. A nice new queen busily laying eggs. None hatched yet, but a goodly number in the two center combs. So that's that. But it is still a mystery as to just what went on.

I have had colonies before that seemed to be queenless, and in which I couldn't find a queen. In such cases I generally smoke the bees through an excluder, or put a drone guard on the front of the hive and dump the bees there. In either case if you don't see the queen running, you find her trying to get through the excluder wires. I didn't do either of these in this case because I didn't think it necessary. It was a nice colony but not so populous that such measures were necessary. There is only one theory that comes to me as to what was going on. I wonder if she was out on her mating flight while I was looking.

The laying queen that I found eventually is a bright yellow. She would stand out like a house afire, even if she was a small virgin. I don't see how it was possible to miss her, so that's why I think that maybe she wasn't home when I was looking for her.

I don't know where she got that golden color. The bees in that hive are so dark that you might think that they were the old blacks. Maybe she is a throwback to her great-grandmother.

That problem is solved, but I have another. A colony so mean that they fight even during a honey flow. Last year, this colony was a little bit on the warmish side, but not so bad that they couldn't be worked, just mean enough to make it interesting. This year, you can't even rub against the hive but what a dozen or more come out to see who is knocking at their door. Just to open the two hive bodies to look up under is the signal for a couple of hundred to shoot out and sting like furies. They ping against your veil like a machine gun. This is during the honey flow, mind you. Can you imagine giving that colony a thorough inspection in August when there is a dearth?

I'll have to give them a dose of cyanogas, or find a way to requeen. I can't keep them. They really are a menace, because frequently I have city people come around to look at the bees. I can't run the risk of getting them all stung up. To make it even worse, this is my No. 1 hive, that is, it is the first hive you come to when you go over to see the bees.

I don't relish finding that queen, I'll tell you. I wouldn't dare dump that bunch, either in front of the hive or in an empty body over an excluder. A plan is cooking, and I think it should work. I'm going to switch that colony to the stand of the formerly queenless one. Because of the gap in brood rearing, it is not too well populated right now, and these demons can use up their energy getting honey while the new queens' young bees are hatching out. At this time of the year they won't live more than a couple of weeks longer, and by the time the young bees are flying, it should be a tame colony again. With all of the old warriors out of the way, because they will fly back to the old stand, I should be able to pinch the head off this she-devil, and put in a queen with a more cooperative spirit.

So far as current honey news is concerned, you are all aware that this was a very late spring. As predicted, the net result was that the early flowers were late, the mediums were a little late and the normally late spring flowers were on time. So, locust, vetch, clover, blackberry and alfalfa are all blooming at the same time. This probably will cut down the time that the bees can gather honey, but boy oh boy are they putting it in. That should mean that I get comb honey this year, and sure enough the two colonies that have comb supers on are working in them. I put two supers each on the two colonies selected, and glory be, they are working in every section. One colony in fact

(Continued on page 504)

XUM

RAINFALL AND DESERT BLOOM

by LESLIE BURR, El Centro, California

Typical view of the semi-desert country.

Typicaly red-bark during July and August.

Wild buckwheat taken at three feet.

DURING THE months of June, July, and August of 1954 I made frequent trips over U. S. Highway 80, that runs North of the Mexican Border between El Centro in the Imperial Valley and the City of San Diego on the Pacific Coast.

The distance is 120 miles and about 85 of those miles are through the mountains, the center of which is a ridge running North and South, the top of the ridge being over six thousand feet altitude in places. This ridge precipitates the moisture of the coastal winds, with the result that while the rainfall averages about seven inches at San Diego, it increases as the altitude increases, with the result that annual rainfalls in the mountains have reached over 40 inches at times. Along the Highway on the Western slope there are large live-oaks, sycamore, and some groves of beautiful pine trees.

But it is the Eastern slope that is the subject of what I have to say here. This country is a semi-desert, and until some five years ago or so there were several apiaries along U. S. Highway 80 between the Mountain Springs Grade and Laguna Junction. The dominant flora, traveling eastward from Laguna Junction is white sage, wild buckwheat, red bark and catclaw. The reason for the disappearance of the apiaries has been a series of dry years.

But this year the Eastern slope had some rain, but not enough to make a honey crop, but enough for the vegetation to make a show. That is with the exception of the white sage, which merely put out its stunted growth, as during the previous years.

The photographs submitted herewith were all taken at one place, and within but a few yards from the car which was parked just off the highway.

As to whether the bloom this year is a prelude to more rainfall in the years to come, which it should be, is a matter that only time can tell. The photos were taken August 14th, 1954, and at the time I spent considerable time observing the few bees that were visiting the bloom, and the result of my observations was that there was very little, if any, nectar in the bloom.

Direct Traffic to your Roadside Stand

CHARLES W. GOUGET, Glen Ellyn, Ill.

THE GLAMOUR of getting food "direct from the producer" plus the superstition that home grown foods are superior to those purchased in the stores provides the chief incentive for roadside buying. Although the actual differences in taste, quality or health properties are more psychological than real, this common fallacy can work to the distinct advantage of the small producer.

To the customer this very "real" difference between store honey and honey sold at the apiary probably lies unconsciously in the personality of the beekeeper or members of the beekeeper's family with whom he comes in contact. Since there is considerable satisfaction and pleasure derived from the friendly association with a family that can produce a quality product, honey purchased at the apiary or at the beekeeper's roadside stand has a personality, while honey that has travelled thousands of miles before it reaches the consumer has lost its glamour and has no personality.

This psychological fact places the small producer in a favored position to sell his product direct to the consumer at practically retail prices. However, prospective buyers do not "flock" to a roadside stand when they do not know that the stand exists nor what it sells. Wise advertising will help to identify and to glamourize a roadside stand and to acquaint the prospective buyers with the merits of the products sold.

Kinds of Roadside Stands

A roadside stand may be a kitchen table, a family car, a truck, a modest, nicely appointed family stand or a deluxe drive-in resembling a high class store. Each of these types will cater to a different clientele, and each will have its characteristic appeal and advertising scheme for the customers. Table, car or truck stands are about the same type, designed to get rid of small volumes or large surpluses of honey quickly with a minimum of effort and expense. These types are "elastic" and mobile which means that they can change their location to better advantage whenever the operator thinks that it may be wise to do so.

In this type of selling the customers are nearly all transients so that building up a patronage for repeat orders through good will is not an important factor. Advertising also is relatively unimportant because the volume of sales depends almost entirely on the volume of traffic that passes the stand, the salesmanship of the operator, and his ability to make an attractive display. One jar of honey on a table or on the hood of a car is not an attractive exhibit, in fact it is no exhibit at all and will attract few, if any customers. People are attracted by "bigness" and quantity, and this fact is one of the secrets for selling at roadside markets. Approach signs, also, will help to call attention to the location of the stand, but they should be neat, attractive and well printed. Mobile units produce the quickest return with the least effort and expense.

The Family Stand

The simple, inexpensive family stand operated by members of the beekeeper's family is probably the most common kind of honey stand along the highways. Usually the "family stand" is a part of a community, and as a result it builds up its trade on good will, quality of its products, neighborliness, and friendships with members of the family. The approach from the road is homey in appearance, and often "old shade" and lawn chairs invite the customer to relax after he has made a purchase. His purchase then becomes much like a social visit to a friend.

The stand is always "spotless" clean and neat and "Honey" is the most prominent item on display. The atten-

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dants too, who are always members of the family, are always clean, neat and friendly, and the stand is never left without one or more of them. The family knows that pleasant, courteous service is its best advertisement because it cannot afford expensive signboards, brochures and unclassified advertising to direct the traffic its way. Its advertising is limited largely to a few approach signs, well designed and well placed, and a few classified ads in the local papers during the honey season. In both cases the message should be short and to the point: For example, an approach sign may read: "PURE HONEY 500 feet ahead." Farther down the road a sign may read: "YOU HAVE PASSED JOE BLOE'S HONEY STAND". Likewise a classified advertisement in the local paper should be well worded to bring people out to the stand, as for example: "Pure clover honey, delicious flavor, new crop. Joe Bloe's Honey Stand on Swift Road."

The Deluxe Drive-in Stand

Located at some conspicuous spot along a highway such as a curve in the road or at the top of a hill, the deluxe stand often presents an interesting, attractive, spectacle with an inviting driveway landscaped with flowers and shrubs to "draw" the tourist trade. Since this type of stand usually employs outside help it loses its family touch and homey atmosphere. In its place it substitutes everything that glitters: bright lights, ceramics, novelties and food specialties with honey as the leading food item. Its overhead is very high consequently it must do a large volume of business to make it pay. To maintain volume, therefore, advertising becomes a necessity in order to "funnel" traffic in the proper direction. People out for a drive must be aware that such a place exists, and of course they must not be disappointed when they go there.

Attractive signs are scattered around the countryside, and a "catchy" name that can be easily remembered is used to convey a friendly message which must always be short and to the point. For example:

VISIT HILLTOP HONEY FARM
FOR PURE HONEY
Route 12 & 24

The word "visit" is used instead of the word "stop" because it implies a kind of social call that everyone enjoys. Repetition produced by many signs will help to fix the message and the location of the stand in the minds of tourists or those out riding just for an "airing".

On the road leading directly to the stand the tourist is again constantly reminded:

HILLTOP HONEY FARM 5 miles
Int. Route 12 & 24
PURE HONEY 1 mile
PURE HONEY 500 ft. ahead

and finally

WELCOME TO HILLTOP HONEY FARM

In addition to the road signs to direct traffic in the right direction attractive brochures may be sent to former customers and to residents of nearby suburban towns to bring out curiosity seekers and those interested in special foods or novelties of exceptional quality. Unclassified advertisements in a number of town papers may serve the same purpose, but this form of advertising is less personal and consequently less effective. Well chosen pictures on brochures will help to make the message objective, and as a result they will contribute toward making more sales.

Variety Selling

When a customer goes to an apiary or to a beekeeper's roadside stand he intends to purchase honey because honey is the only thing sold. If he goes to an orchardist's roadside stand he knows that he wants to purchase fruit and not honey. However, if he should go to a grocery store for honey and apples he may become so interested in items featured by the grocer that he may come home with soap chips and forget about the honey and apples altogether. This fact is one of the chief reasons why honey does not sell well from a grocer's shelves. Attention is distracted by too many other items which seem at the moment to be more important to the shopper than honey. The same idea applies to a roadside stand. A wide variety of items will scatter interest so many ways that the customer may miss the featured item "honey" entirely.

The lesson taught by this example should be obvious: If one wishes to sell honey in quantity one must sell only honey and products made from honey.

The advertising theme then becomes: Honey; Honey Spread; Honey Candy etc. Sometimes one additional item, but not more, such as apples may help to increase honey sales by attracting apple customers that would not ordinarily buy honey. However, every effort should be made to prevent the stand from assuming the appearance of a "half-baked" grocery store.

Advertising

The object of advertising is to produce more sales and to build up a patronage based on goodwill through the sale of a quality product. Each advertising scheme will vary with the kind of roadside stand in operation, but each scheme will have many things in common:

1. It will direct the customers to the stand.
2. It will make the customers quality conscious.
3. Through a friendly approach, honest advertising and good service it will help to hold old customers and also to gain new ones.

However, advertising cannot be used as a substitute for salemanship because that is where the beekeeper comes in.

"ALL THINGS COME HOME"

says **HELEN E. LEWIS**

THE WORDS of an old song came back to me with life-like reality recently as I enjoyed a sight which I expect most people who work with bees will have seen for themselves very often. It was the lovely hour of twilight as I stood in one of our apiaries while my husband performed the brief chore which had taken us there. I had left behind me the hustle and bustle of the day, including some hard-to-wash pots and pans still soaking in the kitchen sink awaiting my return, and taken the rare opportunity afforded me this summer of visiting the bees.

Two colonies sat slightly apart at the back of this yard under a group of apple trees which grew along the fence, and as I stood quietly nearby, tiny brown creatures came floating down out of the nowhere on their evening trek home. With unerring instinct they landed in their own front door-yard and proceeded inside. Like a strange silent armada of planes they were, coming in not in nose-dive fashion, but on all fours—sixes would be more accurate, I know—and dropping sometimes perpendicularly into the soft carpet of grass in front of the hive. One adventuresome bee alighted on a spear of tall grass where it rocked to and fro for several minutes taking a last breath of evening before completing its journey. Another didn't even bother to land on the step and crawl inside in a genteel manner, but came sailing in with precision accuracy and was swallowed up out of my sight in an instant. And still the homeward flight continued, each little brown body to its own family quarters. "All things come home at eventide," goes the song, and here as in so many other instances, the creatures of the wild accept nature's laws without question while we "intelligent" creatures so often flout her ways and pay the price in tired minds and aching bodies. Home is only home as long as there is deep, abiding peace and harmony there and an inviting sense of protection and well-being greeting one at the threshold. Apparently the bees have their household ways thus well arranged, for the approach of evening calls them all home.

We left the apiary, and went back home—to those dirty dishes, you say? Yes, but they were easy now, and quickly disposed of. I proceeded to wrap comb honey till bed-time with a rested, quiet mind, for we too, like the bees, had "come home at eventide".

Ontario, Canada.

XUM

A Handy Hive Lifting Device

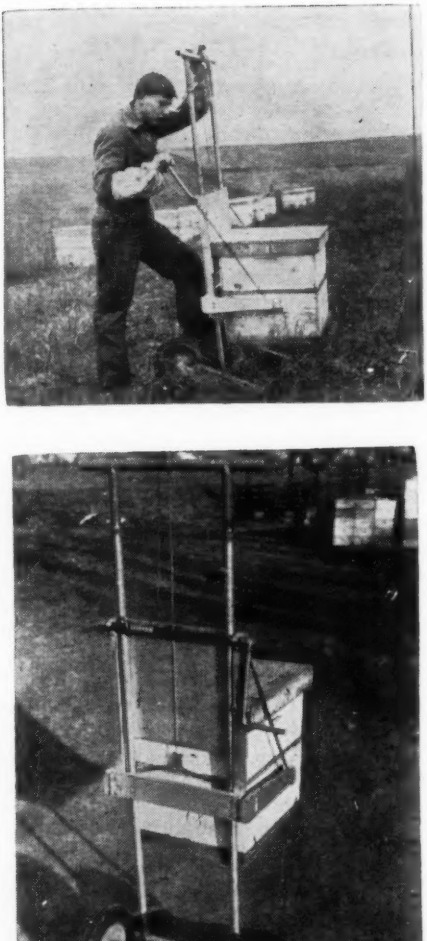
by LEROY F. BAXTER, Blair, Neb.

THE LIFTING device is a windlass mounted on the back of the framework which slides up and down over the handles which are 65 inches in length. On the bottom back is a cross member to which the lifting arms are hinged. These two arms are connected loosely by a chain to which the lifting cable is attached in the center so as soon as any lifting strain is put on the cable it pulls these arms tightly against the hive or super gripping it with the two metal projections at ends which fit

The lifting device in place ready to raise the hive.

into the hand holes. The 3/16-inch flexible steel cable extends up and over the small pulley at top of the handle and down over the winding drum on the handle. This winding drum is a piece of ¾-inch pipe to which the handle is attached. The handle is hinged so as to swing in or out and is locked in position at any height by a small metal projection on the side over which the hinged crank is pushed in until it catches to prevent unwinding.

To wind or unwind, the handle is pulled out until it clears the lock and then it will rotate freely. This is as simple and cheap as it can be made and is efficient. The wheels are 12 inches in height and the tires are three inches in diameter, semi-pneumatic. The handles are made from one inch conduit

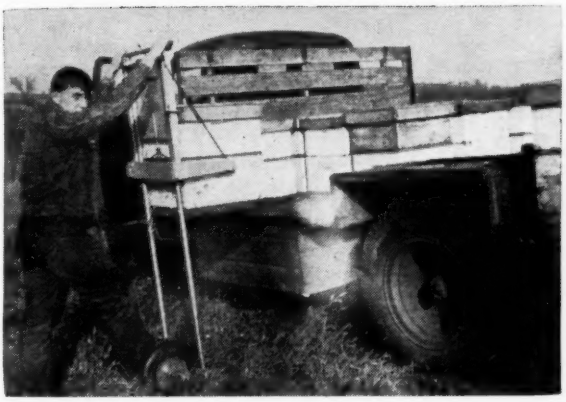


The hive lifted on the frame ready to be moved to the truck.

tubing, and so far, have stood the strain of any load we put on them. As shown, the lifter will stand alone on level ground with hive elevated to the top. The extreme lifting range is 37 inches, which is high enough for my truck. It could be made to lift higher by extending the handles, which I did by eight inches. Also the original winding drum was only a ⅝-inch rod and by putting a ¾-inch pipe over it I increased the drum size to 1 and 1/16-

inches which is easier on the cable.

This loader is light, can be easily handled by one man, or loaded onto the truck. As stated before, a 15-year-old school boy easily loaded over 90 hives like shown which had a full super of honey on top, one layer only, as it won't lift high enough to put one hive on top of another, from the ground.



Arriving at the truck the hive is raised to a position to be easily shifted to the truck body.

I like the lifter very much as it now stands; it saved me the price of an extra man for two days on this last moving job. It makes lifting top supers easy for examining brood nests or looking for queen cells or for placing queen excluders over brood nests. Those interested should write Mr. Kruse, Lusk, Wisconsin for price and information as I do not make or sell them.

VALLEY VERDURE

C. D. CANNON, Warren, Pa.

ANY BEEKEEPER, looking for a new location, will do well to choose one in or near a fair sized creek or river valley. Waste lands in such valleys are pretty sure to have some of nearly every kind of plant, shrub or tree common to the area. These, though small in number, rarely fail to provide a living for bees through the growing season. Besides these, there are always some valuable nectar plants which grow primarily in the rich moist alluvial soils of the valley. Early in the spring there is the ever present pussy willow and tag alder supplying pollen.

In mid-summer we have two excellent honey producers in this area. Both are perennials, growing in clumps, five to seven feet high. One resembles golden glow but has many single yellow flowers, made up of numerous flowerettes. The other is similar to queen of the meadow in growth, but the flowers are whitish purple in appearance and the leaves are light blue-green. Bees work both these plants with excitement almost equal to that of a robbery.

A little later an annual vine called wild cucumber here, starts opening its clusters of white blossoms and the perennial wild clematis is doing so too.

These are only a few. There are many lesser ones here and other ones in other parts of the country. The interesting part is that the wild tangle of vines and plants in such valleys are quite consistent producers. They will provide a steady living for bees. When nearby fields produce a good honey flow, it is all surplus.

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A Talk to Beekeepers

by M. J. Deyell

I HAVE to go away Monday morning and so I am in my office this Saturday evening dictating this talk. I arrived here a little before 9 p.m. and walked out to our scale hive, just west of the Gleanings office. There is a large basswood tree in full bloom about 12 feet from the scale hive. The blossoms were full of bees, a few minutes before 9 p.m. EST. The sun had gone down. I watched some of the bees flying from the tree to see if they would enter the hive. Those that I saw, as they left the tree, circled above it and then took off, away from the hive. It would seem that bees prefer to fly a little distance after nectar, rather than visit plants near the hive. At 9:15 p.m. quite a number of bees were entering the scale hive and a few were leaving to get another load of nectar. While it was almost too dark to see the bees entering the hive, I counted 15 bees entering the hive in one minute. At 9:20 p.m. there were seven per minute entering, and at 9:25 p.m., when it was almost dark, three or four bees came home. It would seem that bees must be able to see in the dark.

Bees Working by Moonlight

A few years ago I read an account of bees working basswood bloom during a very bright, moonlight night. I do not recall just where or when this occurred but I can believe that it actually did happen. I do remember when I kept bees in Michigan, south of Traverse City, I was awakened at 4:30 in the morning by bees going out after basswood. I had 220 hives of bees in one yard and they surely did make a roar when they got under way.

Too Many Bees for One Location

At the present time commercial beekeepers are putting fewer hives of bees in each apiary than they did formerly. This seems to be a good idea. However, during a year when nectar and pollen plants are plentiful, it is rather difficult to overstock an apiary site. Thirty to 40 hives in each yard seems to be about right. With fewer hives, yards can be put closer together, possibly three miles apart instead of four or five.

The Four-and-a-half-year-old Queen—Where Is She?

In my May talk I mentioned finding a marked queen with a clipped wing that was introduded in September, 1951. She had paint on her shield or thorax. You will recall that I mentioned seeing another queen about six inches away from the old queen, presumably her daughter. Both queens were in good condition and apparently laying eggs, although I did not watch them long enough to be sure about this. I have looked for these queens twice since, but have been unable to find either of them. I must make another search in the near future. I assume that the old queen will either die or be disposed of by the bees. Does anyone know what really happens to an old queen? I admit I do not.

Downs and Ups

Beekeeping usually consists of ups and downs, or downs and ups, whichever you want to call them. When everything is going along lovely, you better look out for something may happen, and it usually does.

On the other hand, I have found that when things are away down and we wonder if beekeeping conditions will ever improve, in a few days bees do start bringing in some surplus and then we wonder how we ever could have felt so dejected and discouraged. Did you ever think that if each season was practically the same as the previous one,

and every year a good honey year, beekeeping would become monotonous? We never know what is around the corner, and that is what makes beekeeping so interesting.

Living from Hand to Mouth

This is what our bees have been doing for the past two or three weeks. Fortunately, they have been collecting enough pollen to keep up brood rearing and there has been enough nectar coming in each day to stimulate the queens to normal egg-laying. Hives are full of bees and if they know what is going to happen in the future (and I sometimes think they do) we might be headed for a fairly good honey flow. There is a great deal of alsike and white Dutch clover in bloom but somehow the scale hive does not make any large gains. I learn that beekeepers in western Ohio are securing some surplus honey.

Cross Bees

A few years ago, in one of my talks I mentioned having cross bees in one of my yards near Medina. The yard is near a railroad track. I had been doing some work in the yard late one afternoon and got the bees stirred up a little. Just then some section men walked along the track and came in contact with the flying bees. A couple of the fellows were stung and what they said as they made a hasty retreat, wouldn't look good in print.

The other day I visited that yard to do some work and before driving away I sat in my car under a tree watching the bees flying to and fro from the fields. Some of those cross bees came in through the window and were not satisfied until they had stung me. It is surprising how persistent these cross bees can be. It is difficult to knock them down or grab them with your hand. I think I know which hive the cross bees come from but I'm not too sure about it. I have 25 colonies in the yard. I will surely have to do something about removing the queens and introducing a gentler stock. I have found, however, that gentle stock, as a rule, is not superior in honey gathering qualities. This is not always the case. When I was in Michigan, I had one very vicious colony and it was the best one I had for honey production.

Putting on Wet Supers

Some beekeepers let the bees remove honey from extracting combs from which honey has been extracted, in order to have dry combs to put on the following season. This is good practice, because any granules of honey left in the combs may have a tendency to start granulation the following season. However, I pile my supers away with wet combs, and put them on early the following season to let the bees clean them.

Years ago some beekeepers extracted honey at out-yards in screened portable buildings. Supers were left at the yards and the honey hauled home. This avoided hauling supers of honey over roads that were rougher than our present roads.

When putting on supers containing wet combs, this should be done late in the evening. If the supers are put on during the day when there is a dearth of nectar, the bees will get stirred up and may start robbing. Furthermore, if the bees are near dwelling houses, they may cause trouble among the neighbors.

It is an advantage to put supers with wet combs above inner covers with center blocks removed. After the outer covers are put on, bees from other hives cannot get to the combs, and if the supers are put on late in the evening, the bees will have a chance to clean up the combs during the night.

When there is a good flow on, bees pay no attention to the honey in the wet combs. A few years ago, I was foolish enough to put on 30 wet supers rather early in the evening during a partial dearth of nectar. At that time I had not learned the trick of placing the supers on the inner covers and then removing these inner covers later on after the bees had cleaned out the wet combs. As you can imagine, the bees got stirred up and jumped onto the load of wet

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A back-lot apiary which is typical of many such small apiaries in towns and rural areas. The bees perform an essential service in pollinating fruits and vegetables, as well as producing honey for the owners.

combs before I could get them on the hives. I took an awful stinging. Since then I have been unusually careful about putting on supers containing wet combs.

Removing Surplus Honey

I hope you have read the article by Ralph L. Parker on the removal of honey from colonies, appearing on pages 412 and 413 in the July issue of Gleanings. In case you have overlooked this article, it may be well to mention a few of the important parts: If the weather is dry, the moisture content of nectar is likely to be low. Therefore, the bees can expel the excess moisture from the honey quite easily. If wet weather prevails, the nectar may contain an abnormal amount of moisture and it is difficult for the bees to ripen the honey properly.

The combs should be at least three-quarters capped over before they are removed for extraction. In some instances, even though the combs are almost completely capped, the honey may not be well ripened, especially during wet cool weather.

When the bee-escape method is used, it is necessary to check the supers placed on the bee-escape board for small openings. If one small opening, large enough for a bee to enter, is left, the bees in the apiary will find it and eventually remove the honey from the supers. I have had this happen to me more than once.

If the carbolic-acid method for removing honey is used, it is very important to avoid having any of the acid come in contact with the honey. Use only chemically pure carbolic acid crystals, and dilute the melted crystals with 10 or 15 per cent water by volume.

It would seem preferable for beginners to use the bee-escape method.

Make Extracting Room Bee-proof

The first year we were in Michigan, I converted an old woodshed into a honey house. I tried to make it bee-proof but after extracting was underway and a temporary dearth of nectar came, I discovered, and so did the bees, that the building was not bee-proof. When they get started to rob honey from a building, they will hang around for a long time, even though the small openings have been plugged up. When the honey house door is opened, they will be right there to fly in quickly. It seems necessary to have a honey house bee escape at the corner of each window and in the upper portion of each screen door. I have an extracting room in the basement of my house and bees never get into it.

Extracting Equipment for Small Beekeeper

My equipment is very simple. I use a two-frame reversible extractor which is driven with a small 1/5 h.p. motor. I uncap with an electric knife into an uncapping can, then place the uncapped combs into a wash boiler which catches the drippings until the combs are put into the extractor.

I draw the honey off from the extractor into a bucket then strain it through two thicknesses of very fine cheesecloth into a small honey tank. When the weather is real warm, as it should be for extracting, the honey will strain through the cheesecloth quite readily. If the weather is cool, like in the fall, it is necessary to draw the honey off into 60-pound cans, then heat it in a washboiler in order to make it warm enough to strain properly.

Since I sell most of my honey from my home, it is unnecessary to heat the honey to 160 degrees, as some do when the honey is put into glass containers for grocers.

Detecting Poor Queens

During August, in this area, quite a number of old queens are superseded. When I find a colony with an unusual number of drones, I usually find a queen that has seen better days. She is reaching the end of her usefulness and apparently the bees know this and make plans to have her superseded. Sometimes I will find two or three supersedure cells which are usually located in the middle or upper portion of the combs. Swarm cells are usually found along the bottom of the combs and during the swarming season one may a find a dozen or more cells.

If the colony that is superseding the queen is of poor stock, I kill the queen and introduce a young laying queen. If the colony is of good stock, I leave the supersedure cell and in due time, if nothing happens to the queen in mating, I find a young laying queen. In my opinion, it is hard to beat supersedure queens.

Young, prolific queens, during late summer and early fall, help insure populous colonies of bees for winter.

Get Food Chamber Filled for Winter

In some sections of the country, there is a light fall flow. In such regions, it seems necessary to get the food chamber filled during late summer, and in order to do this, it is preferable to confine each queen down to a single brood chamber, having the food chamber directly above the queen excluder. In some parts of the East, where there is a heavy fall flow, it is possible to confine each queen in a double brood chamber during the late summer and fall months. When the nights get cool, the bees will usually fill the food chamber and part of the brood chamber below before putting much honey in the supers above the queen excluder. In any event the food chamber should be quite well filled late in the fall in addition to some honey down in the lower chamber in order to insure an ample amount of food for each colony during the winter and early spring.

Continental Can Company's new $7 million laboratory for research and engineering in Chicago is the largest and most advanced under one roof in the can-making industry. The Research and Development Center includes more than 260,000 square feet of floor space. By the end of the year 600 people will work here about half of which will be scientists and engineers. They will develop new containers, new machinery to make and close the containers, and new products for packaging in metal and related materials.

XUM

Just News

The **Tenth International Congress of Entomology** is being held in Montreal, Canada, August 17 to 25. It has been our privilege to develop the program of the Apiculture Section for the Congress. Unfortunately the Congress conflicts with the XVI International Beekeeping Congress in Vienna, Austria, and as a consequence participation by European workers will be somewhat restricted. Nevertheless, we have assurance of some 30 papers dealing with honey, nectar secretion, bee diseases, genetics of the honeybee, and effective insecticides on bees. A symposium will also be held, on pollination; this consisting of nine papers. Contributors from outside of this continent include Dr. Anna Maurizio, Switzerland; Dr. Karl Stute, Germany; and Mr. E. B. Wedmore, England. While the program is not yet complete it is expected to occupy at least three complete days. Beekeepers are invited to attend and hear the papers. The registration fee is $15 per person and this includes a banquet and garden party. Applications for membership should be sent directly to The Secretariat, Science Service Bldg., Ottawa, Canada.—C. A. Jamieson, Chief, Apiculture Division.

The annual summer meeting of the **Vermont Beekeepers' Association** will be held at Bradford, Vermont on Saturday, August 25, 1956. Mr. and Mrs. Byron Eastman have arranged for the Bradford Academy building and grounds for this occasion so we can have a good meeting regardless of the weather. Business meeting will begin at 10:00 A.M. and the afternoon will be devoted to the program of talks and discussions. Everyone is welcome to attend. Bring your lunch. Don't forget the honey for exhibition and prizes.—Clyde N. Wood, Secretary.

The annual summer meeting of the **North Carolina State Beekeepers' Association** will be held August 10 to 11 at Western Carolina College, Cullowhee, N. C. We welcome all beekeepers in North Carolina and any others who may be passing through our State at that time.—Dorothy F. McLean, Sec.-Treas.

The **Northwest Michigan Beekeepers' Association** will hold their annual picnic Sunday, August 5, 1956 at Copemish Park, Copemish, Mich., with a noon potluck luncheon, and an afternoon program of speakers, music, contests and prizes. A bee smoker contest will be featured. A cordial invitation to all.—Emily Sommerfeldt, Sec.-Treas.

The **Pennsylvania State Beekeepers' Summer Meeting** will be held in Idlewild Park near Ligoniere, Pa. on Aug. 11. The park is one mile west of Ligoniere on Route 30. A good speaker will be on hand. The meeting will be of the usual picnic type. Our host is the Westmoreland County Beekeepers' Association which will furnish free coffee and lemonade.—A. R. Dean, Secy.

Tuesday, August 7 will be past presidents' night at the regular meeting of the **Eastern Missouri Beekeepers' Association.** All living presidents since the formation of the organization are expected to attend. Visitors in St. Louis are welcome to attend the meeting which is held on the second floor of the St. Louis County Courthouse, Clayton, Mo., at 7:30 P.M.—Ray Reinhold, Sec.-Treas.

The **Middlesex County Beekeepers' Association** meeting will be held August 25 at 2 p.m. at the summer home of Mrs. James Deloroy, Knop's Pond, Groton, Mass.

The **Westchester County (New York) Beekeepers' Association** will hold a joint meeting with the Bronx County and North Jersey Beekeepers' Associations at the summer home of Mr. and Mrs. Jack Ross, at Shrub Oak, N. Y., on Sunday, August 19th from 12 noon on. All members and visitors are requested to bring their own picnic lunch and if possible some chairs. Refreshments will be served by the Association. There is a lake nearby for those who wish to go swimming, so bring your bathing suits. In case of rain, the meeting will be held in Mr. Ross's large basement. Please follow these directions:

Take Taconic Parkway, get out at Shrub Oak exit (Oscawana), turn left, continue

with Route 6 through Shrub Oak—pass Socony Station—drive two more blocks, turn left at Mill Street. Pass a traffic light, continue until you reach a blinker, turn right until you reach a fork in road—there is a grocery store—Taibis Grocery—turn left up a hill, continue for two blocks, you will see a luncheonettt on right and Maple Hotel on left, turn left. go one block, then turn left again or ask where Boxer lives. Our house is on dirt road opposite the Boxers'.

A. Rajogopalan, Mount Abu, India, is spending about 18 months in the U.S.A. to learn about beekeeping in this country. He is a member of the Executive Council of All India Beekeepers' Association. At present Mr. Rajogopalan is with Professor George Abrams at the University of Maryland, College Park, and would like to correspond with beekeepers who might wish to write him.

The **Worcester County Beekeepers' Association** will hold its August 18 meeting at the spacious estate of Mrs. Peabody, in Princeton, Mass. Bring chairs, table and box supper, coffee will be served. Let's all join together and make this the biggest get-to-gether and have fun. — Adolph W. Rozenas, Chairman of Publicity.

The **Palmetto State Beekeepers' Short Course** will be held in Clemson, S. C., on August 14 and 15. A cordial invitation is extended to all beekeepers and those interestd in beekeeping.

William G. leMaistre, 53, of 10625 Saskatchewan Drive, Edmonton, who served 17 years as Alberta's provincial apiarist, died Wednesday (June 13).

Born in England, Mr. leMaistre came to Canada in 1922 and enrolled in the Ontario Agricultural College. After graduating in 1926, he farmed in Saskatchewan and worked briefly in Ottawa before returning to the College staff. In 1939 he moved to Edmonton to take the post of Provincial Apiarist.

Mr. leMaistre took an active part in beekeepers' organizations, both national and provincial. He served as vice president of the Canadian Beekeepers' Council and as secretary-treasurer of the Alberta Beekeepers' Association.

Mr. leMaistre is survived by two sons, Philip and Richard, and two daughters, Audrey and Joyce, all ot Edmonton.

The **North Georgia Beekeepers' Association** will hold its meeting at the home of Mr. and Mrs. Verne Girton, 5071 Green Pine Drive, N. E., Atlanta, Ga., on August 26th at 4:00 P.M. Mr. W. E. Leverette, Georgia State Bee Inspector, will speak. Members wanting to enter samples of their honey in the annual contest, are requested to bring it with them to this meeting. Everyone will be enjoying a picnic lunch so don't forget yours. Visitors welcome.—Mrs. James Rochel, Sec.

The next meeting of the **Norfolk County (Mass.) Beekeepers' Association** will be held at the home of Mr. and Mrs. John Proctor, 9 Mercer Road, Needham, on Sunday afternoon, August 5 at 2 o'clock. An interesting program has been planned to include a report on the Eastern Apicultural Society Meeting, opening and inspection of the club hive; and a round-table discussion of beekeeping problems. Beekeepers, their relatives and friends, are cordially invited to attend and are requested to bring chairs and a picnic basket supper.—Betty Ann Fisher, Pub.

The **Midwestern Beekeepers' Association** will hold its annual picnic on Sunday, August 12th, at Shelter House 7, Swope Park, Kansas City, Mo. Time: 12 noon till 5. Basket dinner—contests —social time. All our beekeeper friends of other bee organizations are welcome. —Mrs. William Brite, Sec.

USDA Extends Time for Comments on Comb Honey Grades

THE U. S. Department of Agriculture today announced an extension of time to February 28, 1957, for filing views and comments on a proposed revision of U. S. Standards for Grades of Comb Honey. The proposed revision was announced by the Department on April 19, 1956, when the time for receiving comments was set for December 31, 1956.

The existing grades have been in effect since 1933. Almost a complete revision of the grades is proposed at this time to be in accord with the development of modern packaging and marketing methods by the industry.—U.S.D.A., Washington, July 10, 1956.

(Continued on page 505)

Care of Extracted Honey

by W. W. CLARKE. JR., Extension Apiarist
State College, Pennsylvania

HONEY IS considered properly cured or ripe, when all of the cells of honey are filled and sealed. Usually a super is removed when it is two-thirds capped. One test, although not always a sure one, is to shake the comb to see if unripe honey will fall out. Honey, to be properly cured, should have less than 18 per cent moisture. Any more moisture than 18 per cent may cause the honey to ferment. All supers may be removed two weeks after a honey flow has stopped completely.

Extracting

Honey should be extracted as soon as possible after being removed from the hive. If it must be kept for any length of time, store in a warm, dry room free from danger of mice and wax moth. Extracting is best done when the room and honey are warm; that is, above 80 degrees F. The comb should be uncapped on both sides, then placed in the extractor. Extracting, first side slow (150 r.p.m.), then reverse to do the other side at a higher speed (350 r.p.m.); reverse again, to do the first side at a high speed. With this procedure, there should be little damage to the combs and they should be free of honey.

Strain the Honey

After the honey is extracted, it should be strained through two or three layers of cheesecloth. It is best to put a piece of screen wire under the cheesecloth to keep it from being forced out of shape. The honey should go into a tank with a gate at the bottom and be allowed to stand for a day or two to allow the foam to rise to the surface. The foam should be skimmed from the top of the tank before the honey is bottled.

The Cappings

The cappings should fall from the combs into a container, such as a tub with a screen bottom to allow the honey to drain from the cappings. A good capping can is made from a metal wash tub, which has a screen made by tacking one-quarter-inch hardware cloth on strips of wood to hold the screen one inch off of the bottom. The tub should have a hole in the bottom to allow the honey to drain into a bucket, to be strained with the rest of the honey.

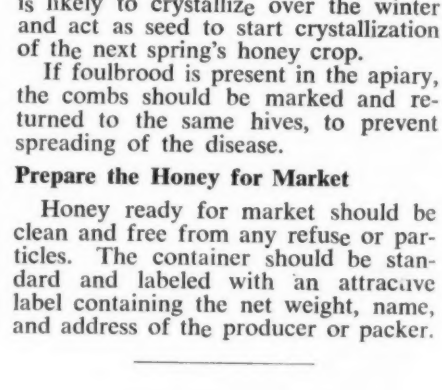
Return Combs to the Bees

After the combs have been extracted, they should be returned to the bees so that the remaining honey can be cleaned out before the combs are stored for the winter. Any honey left in the combs is likely to crystallize over the winter and act as seed to start crystallization of the next spring's honey crop.

If foulbrood is present in the apiary, the combs should be marked and returned to the same hives, to prevent spreading of the disease.

Prepare the Honey for Market

Honey ready for market should be clean and free from any refuse or particles. The container should be standard and labeled with an attractive label containing the net weight, name, and address of the producer or packer.



"I tell you, your bees stung my tire."

American Honey Institute News Notes

HARRIETT M. GRACE, Director
Commercial State Bank Building, Madison 3, Wisconsin

PLANNING and GETTING exhibits ready for the local, county, and state fairs throughout the United States and Canada is keeping people in the honey industry as busy as are their zealous little bees at this season of the year.

One of the best means to educate consumers and create demands for honey, beeswax, package bees, and rental of bees for pollination is an attractive, informative display at the fairs in your community or in your state or in your province.

If we would sell our products we must let customers know about them and make them want them. Perhaps the King of Sweden was right when he said the reason America was a great nation was that Americans know how to make people want things before they need them.

One of the best, and one of the easiest ways of creating consumer desires is the fair—local, county, state, or province—because it reaches all classes of consumers more than any other media, unless it is the public school.

"To see is to learn" has long been the slogan of the teacher; it is the motto of those who are successful in the honey industry, too. No matter how well educated and generally informed or how ignorant of our industry are the viewers at fairs, they will look if we give thought to the planning of our exhibits.

Have Something Moving

One of the first principles of exhibit planning is to arrange some sort of moving exhibit because motion attracts the eye. There are all sorts of motor operated "turn-tables" for exhibits. These rotating shelves can be intricate or simple. Several "lazy-susans" borrowed from your homemaker's cupboard can be used if your own pretty attractive youngster, or the neighbors, will stand by to keep the "susans" turning. The same person, could turn the table, and with the other hand pass out literature containing recipes which the American Honey Institute can supply postage free if the exhibitor pays the printing costs. Write for prices today.

Another means of obtaining turntables is to ask a merchant in whose windows you have noticed turning objects, if he would rent or loan you a turn-table if he is not planning to use it during fair week. Perhaps the grocer or super market manager, who retails your honey for you, can provide a large turn-table upon which you can exhibit your products.

Almost as good as the turn-table is any attractive exhibit on a counter if the products displayed are of the highest quality, absolutely clear and clean, carefully packed in attractive colorful labeled containers, and exhibited by use of color and informative posters and slogans. Crepe paper in attractive colors may be obtained at the so-called ten cent stores, drug stores, or book stores in either wide or narrow widths to use to add color. Posters, streamers and placards, which can be obtained from the American Honey Institute at cost, will aid in getting attention for the display.

An exhibit that we saw which we have never forgotten was placed on a table against a wall. Bouquets of colorful fresh flowers in vases were attached to the two sides of a large cardboard or ply board which served as background for the exhibit. Two vases (olive jars covered with aluminum foil) were wired strongly to the board to keep them in place, yet flexible enough that the vases could be removed daily to replace the stale water and flowers.

An easier method, though not as attractive perhaps, would be to have a sign painter paint flowers on each end of the board. In the middle between the two bouquets of flowers — either real or painted sprays—was lettered "HONEY" in large yellow letters. Beneath honey were the words "The Gift of the Flowers" lettered in blue. On the counter were "stair step-like" display tables with jars of clear golden honey. In between the two stair exhibit tables were displays of all types of honeys and some items made of beeswax.

Other ideas might be a large display of the hundreds of articles made entirely or in part of beeswax as part of the informative part of the exhibit.

XUM

Mr. Beekeeper – Let's Talk a Minute

An Open Letter to American Honey Producers

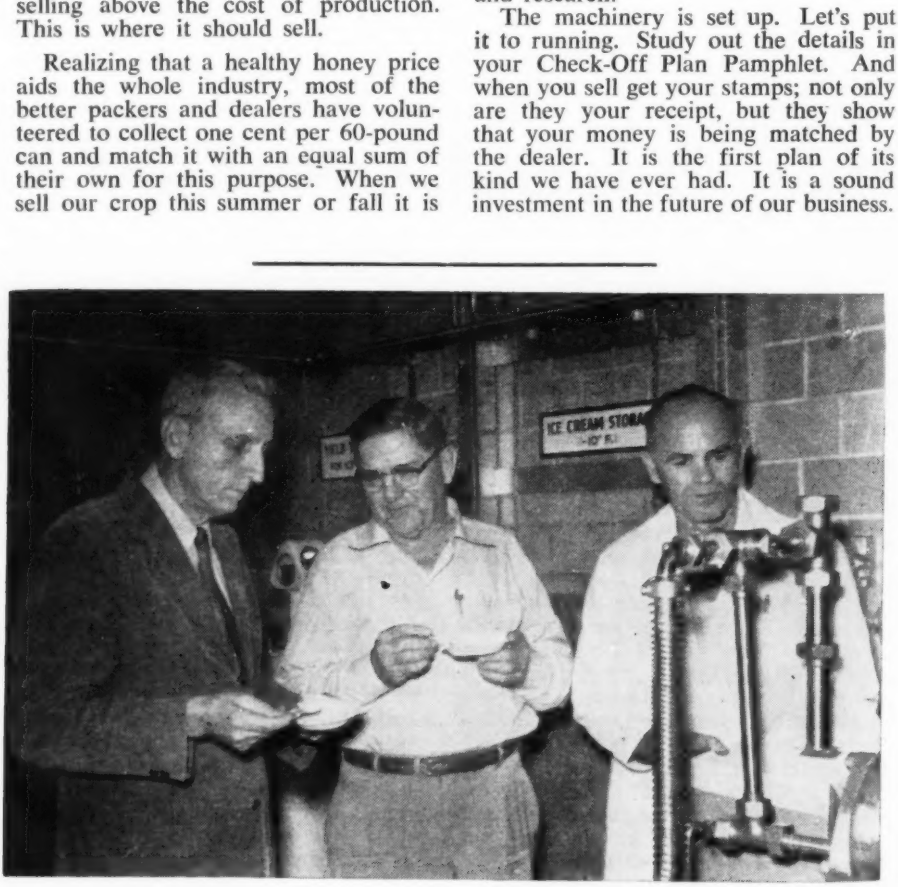
from JOHN W. HOLZBERLEIN, Vice President,
Honey Industry Council of America

HAVE YOU thought about the better prices we have been getting for honey the past two years? We can keep it that way!

The Check-Off Plan, of which you will hear more and more, has been worked out to give us funds to help keep honey in its present good demand. As a direct result of the publicity honey has had the past few years plus improving world conditions honey is again selling above the cost of production. This is where it should sell.

Realizing that a healthy honey price aids the whole industry, most of the better packers and dealers have volunteered to collect one cent per 60-pound can and match it with an equal sum of their own for this purpose. When we sell our crop this summer or fall it is up to us as producers to see that it goes to those buyers who participate in the Check-Off Plan. This will not only show that we are doing our part, but will also insure the payment of an equal amount by the firm who handles the honey. The rate is so low that no one will notice the cost, yet the coverage is so broad that a sum of money will be raised that will be large enough to do a world of good in honey promotion and research.

The machinery is set up. Let's put it to running. Study out the details in your Check-Off Plan Pamphlet. And when you sell get your stamps; not only are they your receipt, but they show that your money is being matched by the dealer. It is the first plan of its kind we have ever had. It is a sound investment in the future of our business.



Left to Right: Mr. John Haynie, Extension Apiculturist; Mr. Ed. Ayers, State Plant Commissioner; and Dr. Krienke, Florida Agriculture Experiment Station.—Photo by Dr. Roger Morse, State Plant Board, Gainesville, Florida.

Asked & Answered

Parentage of the Drones

Q. Please explain as fully as possible the statement that a drone has no father but has a grandfather on his mother's side.

A. A drone, which is the male bee, has no father; but strange to say, he always has a grandfather (a maternal grandfather). There are three kinds or classes of bees that lay unfertile eggs from which drones are produced. The queen bee, after she has mated with a drone, lays two kinds of eggs, fertile and unfertile. Fertile eggs produce worker bees which are undeveloped females and the unfertile eggs produce drones or male bees—a clear case of parthenogenesis, or virgin birth. A virgin queen, one that has not mated with a drone, due to abnormal conditions, will lay only unfertile eggs which produce drones.

When a colony becomes hopelessly queenless, due to the virgin queen being lost in mating, or to some abnormal condition, some of the worker bees will lay unfertile eggs which produce only drone bees. So these drones have no father but they do have a grandfather on their mother's side.

Swarming Cells and Supersedure Cells

Q. What is the difference, if any, between swarming cells and supersedure cells?

A. Swarming cells are queen cells built in preparaion for swarming. These are started usually about a week before the swarm issues. Supersedure cells are queen cells built to raise a young queen to take the place of an old or failing queen. Supersedure cells may be built at any time during the summer, but swarming cells are built only during the swarming season, usually in the spring. When queen cells are built outside of the swarming season, and especially if there is no honey flow at the time, one may be quite sure that these are supersedure cells. If they are built during the swarming season it is necessary to note the condition of the brood and the number of queen cells started, to distinguish between swarming cells and supersedure cells. If the queen is failing there will not be as much brood as in normal colonies, and it is usually scattered instead of being in compact form.

The bees build fewer queen cells for supersedure than they do for swarming, sometimes building only one or two cells at first, then starting one or two more later, so that there may be several cells varying greatly in their stage of development. In the case of swarming cells the bees usually build from a half dozen to twenty or more queen cells, these all being in practically the same stage of development.

Cramps

Q. While putting back frames I noticed the queen apparently dead. I picked her up, held her in my hands for about five minutes, when she commenced to show a little life, and in about ten minutes more she seemed to be all right. Had she fainted?

A. It is evident the queen had what is called the "cramps". Very often a queen, if she has been frightened or injured, will appear as if dead, and it will be some minutes before she recovers. The bees will hover around her, feed her some, and in the course of a few minutes she will be as lively as ever.

Bee Language

Q. Is it true that bees have a language and can tell one another where a source of nectar can be found?

A. Dr. Karl von Frisch has frequently shown that bees have a means of communicating with each other. Through a series of round and wagging dances, scout bees can convey information about the existence of a nectar source from the hive and also the direction of this food source in relation to the sun. Not only will the direction in relation to the sun be given but the exact angle toward or away from the sun is also given. If you are interested in getting further information, then it would be best to read the very famous book, "Bees" by Dr. Karl von Frisch.

Buy and Sell

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate: 18c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceeding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Onsted, Michigan.

IOWA honey, one can or truck loads. Russell D. Smalley, Beaver, Iowa.

Light and amber comb honey. Abram Brubaker, Rt. 2, Lancaster, Pa.

HONEY FOR SALE, can or truckload. Lloyd E. Allen, Tipton, Mich.

CLOVER extracted honey in sixties. Abram Brubaker, Rt. 2, Lancaster, Pa.

MICHIGAN'S finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned sections. Extra fancy, $8.00; Fancy, $7.00; No. 1, $6.00; No. 2, $5.00 case. Ready now for shipment. E. Z. Quick Way B Farms, Boyne Falls, Michigan

NEW CROP WHITE HONEY—Clover and vetch, 20 cents per pound in sixties. Also CHUNK COMB. Lose Brothers, 206 E. Jefferson, Louisville, Ky.

MY CROP of light honey. Wayne Keller, Oshkosh, Nebr.

FOR SALE—COMB HONEY, now ready to ship. Write for prices. C. W. Schrader, Waterville, N. Y.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

CASH for all types extracted honey. Send sample and best price. Buckeye Honey Co., 3930 No. High St., Columbus 14, O.

CASH FOR BEESWAX. Write as to quantity and we will quote price. Muench-Kreuzer Candle Co., Inc., Syracuse, N. Y.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, Ohio.

WANTED — White extracted or comb honey. Send sample. Millersport Honey Company, Millersport, Ohio.

BEST CASH DEAL for your honey (any grade) and beeswax. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

HONEY WANTED — All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, California.

HONEY WANTED, all grades in 60's. Mail samples, advise quantity, best price. M. R. Cary Corp., 1112-14 East Erie Blvd., Syracuse, N. Y.

WANTED, chunk comb and extracted honey. Mail sample and price. Stoller Honey Farms, Latty, Ohio.

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A. I. Root Company, Medina, Ohio; Council Bluffs, Iowa; San Antonio, Texas.

WANTED: Light amber clover and fall flowers honey, no buckwheat. Also white clover. Send sample and lowest price. Cloverdale Honey Co., Fredonia, N. Y.

WANTED—Honey in sixty-pound cans, also beeswax, any quantity. L. E. Allen, Tipton, Mich.

WRITE FOR Shipping tags and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. Walter T. Kelley Co., Clarkson, Kentucky.

CASH for Amber and Buckwheat Honey. Best cash price for wax. Hubbard, Onsted, Michigan.

WANTED—Buckwheat and some amber honey. Eastern Food Products, 421 Bedford Ave., Brooklyn, N. Y.

HONEY WANTED, all grades and colors, in tins or drums, granulated or liquid, highest prices paid, trailer loads. For Domestic and Export. Send us samples representing each lot. CHAS. E. FARRIS CO., 99 Hudson St. NEW YORK CITY. Established since 1910.

FOR SALE

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Michigan.

THE BIGGEST BEE SUPPLY Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

FOR SALE—New heart cypress 10-frame bottom boards. KD., 10 or more, $1.00 each; 50 or more. 90 cents each; 100 or more, 85 cents each. One nailed up sample postpaid. $1.25. Fred L. Poole, Elizabethtown, Rt. 2, Box 67, No. Car.

QUEENBEE PAINTING OUTFITS, $1.50 postpaid. Southwick Apiaries. Waban, Massachusetts.

FOR SALE—Once used cans and once-used drums. Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Michigan.

FOR SALE — Several thousand once-used 60-lb. cans, 30c each; also 1500 more than once-used cans, 20c. F.O.B., River Rouge, Honeymoon Products Co., 39 East Henry St., River Rouge, Michigan.

CLOSE-OUT on 60 pound containers—3000 clean, rust-free, once used 60 pound cans—35 cents each. CLEARBROOK HONEY FARMS, CLEARBROOK, MINN.

90-gal. Root honey tank, $20.00; 2-frame honey extractor, $25.00. Morris Wickham, 423 4th St., Kenosha, Wis.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

PACKAGE BEES—Take a vacation on your express money. Come for your bees; be our guest whle here. 1800 hives to shake. Booking orders now. MILLER BROS., SAFFORD, ALA.

NORTHERN ITALIAN QUEENS — for production $1.00 each; 10 up, 90c. Shirl Baker, Rodney, Michigan.

IT PAYS TO REQUEEN. Old queens in your hives cost a lot through lost production. Young queens pay for themselves and give a good profit besides. One super of honey difference in favor of the young queen is not too much to expect in most any location. We can furnish the best select young Italian laying queens from now until Oct,ober at $1.00 each; 10, $9.00; 25 $20.00. Prompt shipment. No disease. Air Mail postpaid. H. C. Short, Fitzpatrick, Ala.

Light three-band Italians and Carniolan queens, $1.00. Luther Pickett, Efland, N. C.

CARNIOLANS and CAUCASIAN bees. Queens, $1.00 each; $85.00 per 100. Booking orders for 1957. Lewis & Tillery Bee Co., Route 3, Box 251, Greenville, Ala.

DADANT'S Starline queens. Real honey-getters and very gentle. 1 to 25, $1.30; 25 to 100, $1.20; 100 up, $1.10. Our regular strain Untested queens, $1.00 each, any number. Alamance Bee Company, Graham, N. C.

FOR SALE: 400 eight-frame, double-story colonies. Roger Dittman, 871 East 7010 South, Midvale, Utah.

FOR SALE—250 ten-frame hives of bees, inspected for extracted and comb production. Complete outfit. Extra equipment. Part of crop included. F. J. Smith, Castalia, Ohio, Route 1.

FOR SALE—130 colonies of bees. and equipment or part. State inspected. Reason for selling, illness. T. H. Rownes, Rt. 4, Box 327, Walla Walla, Wash.

SEEDS

HONEY PLANTS our specialty. Catalog on request. Pellett Gardens, Atlantic, Ia.

WANTED

Wish to purchase 100 to 400 hives northern or central New York on location with or without equipment. Box 2860, Gleanings, Medina, Ohio.

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

NORMAN BROS.
QUEENS 65c
By return mail
NOW READY. Send us your rush orders. Prompt service, full weight, safe arrival, health certificate, and satisfaction.

— PRICES —
2-lb. pkg. with queen $2.75
3-lb. pkg. with queen 3.50
Tested queens 1.00
Package bees are shipped express F.O.B. If wanted shipped parcel post, add postage.

NORMAN BROS. APIARIES
Ramer, Ala.

QUEENS
$1.00
W. E. PLANT
Hattiesburg, Miss.

HARPER'S FAMOUS HIGH QUALITY
Italian Queens, air mail ..... 75c each
10 and up ..... 70c each
CARLUS T. HARPER
New Brockton, Ala.

Booking orders now. Over 30 years a shipper. Send for Free Circulars.
BLUE BONNET APIARIES
Weslaco, Texas

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

XUM

QUEENS

ITALIANS CAUCASIANS

You can never have a good colony of bees with old, worn out queens. Better not take a chance, requeen with good, young STOVER queens.

—PRICES—

In Lots of:

1 - 24 ..... 85c

25 - 499 ..... 75c

Tested queens $2.00 each.

The Stover Apiaries

Mayhew, Miss.

LIVE AND LEARN

(Continued from page 485)

is so far ahead that I gave them a shallow super fitted out for cut comb honey. I don't know if it is good practice to do that, but I only have the four comb honey supers and don't want to add more equipment unless I can really use it regularly. In a normal year, four comb honey supers is four too many.

GLEANINGS IN BEE CULTURE:
Dept. E-2, Medina, Ohio

Yes! Enter my subscription to Gleanings for the period checked below:

☐ **1 yr. $2.00** ☐ **2 yrs. $3.50**

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50c per year extra for foreign

Name .....

Street .....

City ..... State .....

☐ **Remittance enclosed.** ☐ **Bill me.**

WANTED—Used honey filter. Must be in A-1 condition. R. W. Barnes & Son, Oakland, Nebraska.

WANTED — 10-frame dove-tailed bee equipment and bees. Bird Harbor, Seneca, Illinois.

WANTED—Several hundred colonies and other beekeeping equipment. Will trade modern suburban home near Houston, Texas. David Rennie, 914 West Main, Norman, Oklahoma.

WILL BUY several hundred colonies bees in 10 frame hives. Also 10-frame supers, etc. Cash. Box 2711, Gleanings, Medina, O.

MISCELLANEOUS

PLAIN or wavy-wired foundation. Beeswax rendered and purchased. Wax Workers, Ithaca, New York.

ROYAL JELLY in capsules. Each contains 10 mg. Royal Jelly, 5 mg. Vitamin B, 5 mg. Calcium Pantothenate. Boxes of 30, $1.50 to beekeepers. Retails for $3.00. Prairie View Honey Co., 12303 12th St., Detroit 6, Michigan.

FOR SALE—Royal Jelly and The Little Queen Royal Jelly Extractor. Royal Jelly Enterprises, 1017 Los Carneros Avenue, Napa, California.

WANTED—Cash paid for a large outfit of bees in the midwest, standard 10-frame size preferred. Send all information in first letter. Box 224, Geanings, Medina, O.

HELP WANTED

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FOR SALE—Small apiary. Dr. McKee, Reading Center, New York.

JUST NEWS

(Continued from page 497)

Mr. Robert Bryant wishes to announce to his many friends in the industry that the Honey Department of the firm of Bryant & Sawyer has been dissolved after having been in business for 30 years. As of 1 July, Bob has affiliated himself with the B-Z-B Honey Company, assisting Mr. Hans Schumacher and Mr. Bill Therkorn and taking with him to that firm all his domestic and foreign connections. Bob will appreciate if you will contact him at the B-Z-B Honey Company, Box 230, Alhambra, California.

The annual beekeepers' meeting for **Massachusetts beekeepers** will be held on August 11 at the Bowditch Club House in Amherst. The principal speaker will be Dr. John Eckert, University of California. Others will participate to present timely information. All interested beekeepers are invited to attend. The time of meeting will be 10 A.M. — F. R. Shaw.

The annual summer meeting and picnic of the Empire State Honey Producers' Association will be held Saturday, August 11th, at Emerson Park, on Owasco Lake, Auburn, N. Y. This beautiful spot has everything — picnic tables, tall shade trees, a beach, an amusement park nearby to keep the children happy, and an enclosed pavilion in case of rain. The lunch room will be open for those not wishing to pack a lunch.—M. R. Cary, Sec.-Treas.

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100 up	.90 ea.	1.15 ea.

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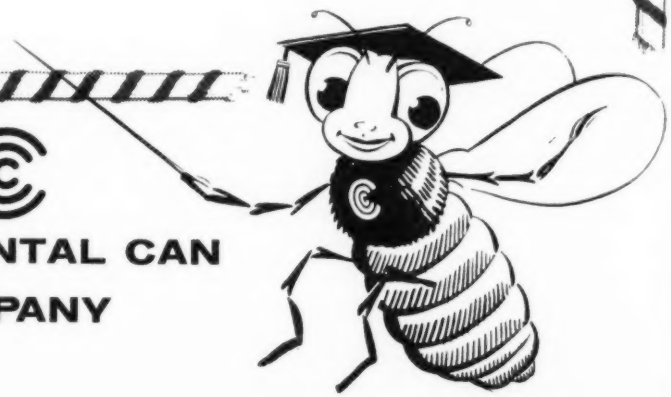

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100-up	1.10	85c			

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Queens clipped or marked, if desired, free.

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70c each, remainder of the season.

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For your summer and fall requeening we offer you an outstanding Strain of Three Band Italians and can furnish select young laying Queens promptly on receipt of your order.

Prices

1-24	$ .85 each
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Our Mott Strain is from early imported Italians. Their behavior is more according to pattern than most other races. They are usually gentle, hardy, good workers, and not inclined to swarm. Use our queens and you will be in line for all the honey crops, and have nice bees to work with.

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Strain of Italians. Having a late fall honey flow, we produce our finest queens, and give our best service.

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That stand the test for honey-gatherers, gentle, prolific. QUEENS bred from hives making 300 pounds and over of honey. Fumidil-B fed grafting and queen yards. HEALTH CERTIFICATE with each shipment.

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FROM FOREIGN LANDS

(Continued from page 484)

upper Bavaria, Germany, were observed making numerous visits to rye. This plant, is of course, wind pollinated. It was discovered that the bees were collecting honeydew secreted from the plant louse, Sitobium granarium. The honeydew, thought to probably be melezitose, crystallized very rapidly.

Zeitschrift fur Bienenforschung. Apr. 1956.

BEES

(Continued from page 472)

combs beneath are stripped of their wax and used for honey storage. Interspersed among the combs may be a few large pollen cells (Fig. 11).

The stingless bees generally make separate cells for pollen, honey storage, and brood. Some of them make honey pots as large as Japanese saki cups. The nests of stingless bees are remarkable for the free use of a material called cerumen, composed of mud, pitch, wax, and other materials in various proportions. This material is used for struts between the combs and for a cavitatious insulating envelope around the nest.

We could expound at great length on the fascinating details of apid nests. None of the other families have nests that approach them in size, complexity, or specialization. Unfortunately these are the very features that make it impossible to describe them adequately in this brief article.

WHAT HAPPENED TO TENNESSEE BEEKEEPING

(Continued from page 473)

no choice but to quit beekeeping and turn attention to other means of livelihood. Apiaries were neglected or sold to more venturesome beekeepers in other places. Hives that cost good money were stacked to rot outdoors while the bees died and spread bee diseases everywhere. That was not a pretty picture. But hope and renewed interest returned along with the introduction of two wonderful honey-producing farm plants, hairy vetch and crimson clover. More recently another important legume, Ladino clover, has appeared in large acreages on the farms. So far Ladino clover is reported as being a fair honey producer.

A new generation of beekeepers began all over again, and some commercial beekeeping outfits moved in from other states to share in the new beekeeping prosperity. But there were grave problems to be solved, especially that of the widespread disease, American foulbrood. With the renewed interest in beekeeping in the State Department of Agriculture, the reorganizing of the State Beekeepers' Association, and an educational and bee inspection field program under the leadership of the State Apiarist, able leadership was soon found among the beekeepers. From there, progress has been rapid.

It is noteworthy that in recent years beekeeping in other parts of Tennessee, dependent more on sources of honey other than sweet clover, has also increased and improved.

CAUCASIAN and ITALIAN QUEENS

Requeen with top quality queens for gentle bees and good honey producers.

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50 to 99 .....70c
100 up 65c

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All breeding queens checked for honey production. You can't go wrong if you use our queens. Our 100% Satisfaction always. Italians only. No charges for clipping or airmail.

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3-lb. Pkgs. of bees each with young laying queen, $4.00 each, plus shipping charges. We ship bees C.O.D. when requested. We ship queens in lots of 20 or more C.O.D. We pay shipping charges on queens.

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We do not presume to have the only good queens but we believe them equal to any and superior to many. Repeat orders substantiate this opinion.

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Prices for balance of season.

Dadant "Starline" 4-Way Hybrids The peer of Hybrids	Magnolia State Italians 3-banded Leather-colored
1-24, $1.40 ea.	$1.20 ea.
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Clipped and Marked Free. Air Mailed. Live delivery, and satisfactory performance after safe introduction guaranteed.

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Requeen your swarms and increase with young laying queens for quick build-up. Caucasian and Carniolan are the gentlest of all races of bees, build white comb, work in cool weather and not bad to drift into other colonies. hence less liable to disease. Laying queens $1.30 each air mailed. $2.00 each to foreign countries. After June 15.

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1956 QUEEN BEES

3-Banded Italians

1-24 ..... $1.20 each

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Shasta, Shasta Co., California

The Yankee Strain — $1.00 each

The Best Queens for Honey Production

23 Years of Breeding

The Stricker Apiaries

Annandale, N. J.

LET'S TALK ABOUT HONEY PLANTS

(Continued from page 478)

was interested to note that black locust was in full bloom in the northern half of the state but already past in the southern half. It had bloomed in late May in Kentucky. In northeastern Ohio, many fields were covered with yellow hawk-weed (**Hieracium**), and bees were working the numerous composite heads in large numbers. This European weed appeared in southern Maine about 1915 and soon took over whole fields forming such dense mats that the grass could not find room to grow. As often happens with new weeds, after a few years it gradually became less common. It is generally accompanied by the orange hawk-weed, a closely related species with deep orange flowers. The honey from hawk-weeds is said to be strong and dark.

Princess tree (Paulownia tomentosa). A large specimen of this beautiful tree was in full bloom on June 12 on the grounds of The A. I. Root Company at Medina. The great pyramidal clusters of violet flowers are quite spectacular. Honeybees crawl completely out of sight into the large tubular flowers which are one and one-half inches long. The princess tree also has large heart-shaped leaves. If planted more frequently, it would become of some value to beekeepers.

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